The Builder.

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Seed Beds of Disease.

THE public mind is occupied with a single topic. No one has room for much other thought. Wherever two or three men are seen together the word "bulletin" will be heard. The blandest countenances look grave. The most frivolous are serious. In every unexpected sound men think they hear the report of guns. Every telegraph-station collects a little crowd. Even the daily press forgets its usual topics. While life seems to hang on a hair, when every moment may bring intelligence, which, if decisive, can be decisive only one way, the pen seems to refuse its usual office. To anticipate evil or to hope for good seems alike out of place. To wait and to look to that source whence life and death are alike dispensed would seem all the occupation of the hour, were it not for a single consideration. The illness of the Prince of Wales will force England, in spite of its reluctance, to look fully for once in the face of sanitary reform.

At no time since the accession of her Majesty, if we except that one period of unexpected sorrow which occurred exactly ten years since, has so keen and close a human sympathy been expressed by English men, women, and children, of every rank and station, for the Royal Lady who has suffered such loss as few in her illustrious position can possibly even estimate, far less undergo. Apart from those feelings of genuine affection, which may be as tender and as deep in the cottage as in the palace, the calamity which widowed Queen Victoria fell with an especial force. A delicate woman, bound by that highest *noblesse* which exercises the strongest compulsion on noble natures, to the constant, daily, unremitting discharge of more actual work of eyes, and head, and hand, than most men of any class habitually perform, no season ever brought to her Majesty the relief of a thorough break in the exigent routine of sovereign duty. One help and aid she had; and when He by whom kings rule struck that worthy partner from her side, the loss was irreparable. And now a fresh trouble is upon her: again lightened, let us hope, by the feeling that universal sympathy prevails, and that a nation's prayers are with her. The affection that has been manifested for the Prince of Wales will not surprise any who have known anything of his Royal Highness. It may be said with truth that the gracious kindness of his manners, an indication of a kindness of heart that no prince could feign, has endeared him to all who know his Royal Highness. The imagination of the people,—all that is tender, and true, and noble, is not yet extinct in old England,—has been further kindled, in dwelling on the interior of the Royal household, with the grace and charms of the Princess. In the third generation, now clinging around the knees of Queen Victoria, the Princess of Wales has given to the country a very picture-gallery of historic faces, limned by a more subtle painter than Vandyke. The face of the eldest prince, a child such as that great artist would have loved to paint, very strikingly recalls the features of the last English king born of a Danish mother. The second Royal boy is almost a miniature of her Majesty's grandfather. The princesses are not less subjects for portraiture such as few painters can hope to render. Over this poetic group is now drawn that veil of sorrow which is best honoured in silence, but which influences the entire country.

The first feeling excited by the sudden change in the tone of the bulletins was one of painful surprise. Excepting those few who knew what the foe actually was, in all his hideous and deceitful likeness, people had become cheerful as to the course of the malady. Nothing, let it be said to the honour of those on whom devolved the terrible responsibility of medical treatment, could have more exactly met the exigencies of the case than the clear, measured, wholly truthful language of the bulletins. But a voice sounds from Sandringham to which we can ill afford to turn a deaf ear. That voice only re-echoes, in tones louder than minute guns, the message which, for a quarter of a century, we have been faithfully and earnestly reiterating to a heedless or a forgetful public.

If a man fires a rifle on a crowd, and kills an individual utterly unknown to him, it is murder. If a man poaching his neighbour's game kills a gamekeeper at whom he never aims, it is murder. And can individual excesses of such a nature be compared, in their actual criminality (so far as the magnitude of the evil wrought can aggravate crime), with the offence of allowing preventible diseases to range unchecked through our land? The pestilence that walketh in darkness was as terrible to the ancient world as the destruction that wasteth at noon day. Each was attributed to the invisible but fatal arrows of offended deity; and resignation to that sudden mysterious, and unavoidable evil was a part of the grandeur of Pagan morality.

But to us pestilence has another voice. It does not strike without warning. It does not, indeed, give audible signs of its subtle approach, as with the castanet-like chatter of the rattlesnake. It does not wrap itself in visible fog, such as we so diligently produce, at this season of the year, for the deterioration of the three millions and a third pairs of human lungs that, as we write, are suffering in London. But its origin, march, and food have been pointed out by the pen of science as distinctly as if the plague were visible, audible, or tangible. Indeed, to one of the senses it not unfrequently does give warning—warning neglected like those of Cassandra; or hated for its own unpleasant honesty, instead of being regarded with gratitude as a signal of preventible danger.

The question of the sanitary arrangements at Londesborough Lodge has been fully and minutely discussed by the daily press; aroused, by this great terror, to echo what we have for so many long years urged on the public.

There is, we repeat, no doubt that the terrible and deadly malady known as typhoid, enteric, or pythogenic, fever is one entirely preventible by the sanitary engineer. Controllable by the physician it is not,—avoidable by the patient it is: not, indeed, by any personal precaution, but by that mode of prevention which it is an utter disgrace to any civilised people not to adopt. In this very character of preventibility, this otherwise resistless scourge bears a strong family likeness to several of the most deadly foes to human life. Small-pox is preventible. It might be utterly and entirely stamped out by universal vaccination. Men who have given their lives to the service of mankind have pointed out proper steps to take to this end. Even legislative action has taken place; when up rises fanaticism, and hounds on the ignorant and the ill-informed to a party-howl against the protection of society by law. An eminent physician of our acquaintance put this matter to the writer in a mode so pithy and so just that it well deserves record. "My only son," he said, "was made very ill by re-vaccination. I took, of course, every precaution; but the action of the virus so disordered him that at one time I had serious fears for his life, and he was ill for more than a twelvemonth. These things do sometimes occur,—we cannot tell why; and children do sometimes die from the results of vaccination. Notwithstanding, any man who does *not* have his child vaccinated is little short of a murderer."

Phthisis, again, is to a very great extent,—possibly altogether,—preventible by drainage. In some localities, where this scourge has been infamously prevalent, the death-rate has fallen to almost *nil* with the removal of the water from the subsoil. In one case the malady reappeared when, in consequence of the completion of some sewerage works, the outlet that tapped the subterranean pond was dammed, and damp and disease returned together. We might extend the list; we might tell how large a proportion of the annual deaths in this country might be reduced by very simple care. All this we have said again and again. To-day we would not say anything to distract the attention from the moral of the fear which shades every countenance.

As surely as twitch-grass springs up in the neglected seed-beds of the slovenly farmer, does enteric fever rise from neglected or ill-arranged sewerage. Even in the very choice of victims which it makes, this blast of death seems to call on the manhood of the country to render its inroads impossible. While neither sex nor age, neither rank, diet, constitutional vigour, personal care, nor any similar distinction can be relied on as affording immunity from its ravages, the chosen victims of enteric fever are men in the very prime and pride of life. The more herculean the structure, the more robust the health, the more terrible, it may almost be thought, the attack. And all that the physician can do is to warn,—and usually to warn in vain,—those whom he wishes *not* to be his patients, to seek the timely aid of the members of another profession.

It is quite unnecessary to disguise the fact that hesitation may arise, and has arisen, between the members of two cognate and allied professions, as to whose province it is to take charge of sanitary arrangements. Strictly speaking sewerage, together with the allied questions of water supply and collection, drainage, irrigation, purification of rivers, protection of springs, and the like, come within the province of the civil engineer. On the other hand, the internal arrangements of house pipes, drains, sinks, closets, and the like, may be held to come within the province of the architect. Small outlay, small details, are involved in the perfection of this part of the circulating system of town habitation; and thus, whether to avoid expense, or from professional jealousy, or from the very general and most mischievous fallacy that it is cheapest in the long-run for a man to be his own architect and his own engineer, at all events, in small matters, the care of the keys of our life in this respect has been allowed to drop into the hands of the plumber, the bricklayer, or even far less educated workmen. In fact, sewerage is not an agreeable practical study. The rougher the workman, the less he

may be thought (perhaps very unjustly) to be personally affected by disagreeable sights and scents. Who does not know, if he, or she, or the friends of either have had the evil fortune to become tenants of some of the cheap houses reared by scamping builders, almost like a growth of toadstools, what it means to "have the drains up?" The event is a sort of *Saturnalia* for the very ronghest of rough labourers. Of course, they make the most of it. A very little experience tells the man who is sent "to see what is the matter" of the absolute and incredible ignorance possessed by most Englishmen on all subjects in any way connected with engineering. Add to ignorance, want of time; add to want of time, disgust. When the master of the house returns from the City, his question will be, "Are the men out of the house?" If not, he may perhaps be induced by his more patient and more suffering helpmate "just to go and look them up." "Well," says he, "what is it? Have you found the stoppage? Why, bless me, you have got all the kitchen floor up!" The man explains or invents; he points out nooks or bends, he displays rags or knots of hair, feathers, and paper; or he shows, if he knows what he is doing, how the workman has avoided a trifling loss of time by putting in a drain-pipe of about a third the proper bore. We need not pursue the subject. Happy are those readers who could not contribute a column or two of their own unsavoury experience to back our words. But the result is that constant danger, great uncertainty, vexatious cost, and manifold repetition of all these evils are the normal and unfailing result of neglect of sanitary precautions, due to the non-consultation of sanitary engineers.

Our habitual readers will not expect that we should now recapitulate the principles, far less that we should enter into the details, of proper sanitary provision. No doubt for days to come column after column of our daily contemporaries will be devoted to the publication of discoveries (new to those to whom sanitary science is new), or to the more or less adroitly veiled puffing of individuals ready for employment. We only regret to anticipate the recourse to this ordinary English safety-valve from the fact that, when people have said their say, written their letters, glorified themselves at their appearance in print, or said a bad word at the stupidity of the editor who has *not* given type to their lucubrations, they will feel that they have done their duty, that they may wash their hands of the matter, and will re-settle down in contented danger till the next appeal to public alarm. For the moment, we have but one word of advice to give to those who are not familiar with our pages. We can not do better than give it in the language of a London physician who has done much to alleviate the suffering of women and of children. One of those men who think themselves adroit at picking the brains of other people thus addressed this physician one day in society:—"Doctor, what should you do, now, if you felt,"—and here followed a description of symptoms. "In that case," replied the doctor, looking very gravely at his querist, "I should certainly consult a physician." That is our advice. Does the parent see his children peak and dwindle, and wonder at flagging appetite, or lost buoyancy? Does the mistress of the house perceive evil odours, or hear of trouble in the sinks? Is there a man about to take a house? Is there one about to repair, to modify one? Is there a physician who is dissatisfied with the progress of his patients? To each we would put the same question — have you consulted a practical sanitary engineer? Have you discharged your conscience in this matter? Have you duly guarded human life?—your own, that of those dear to you, or that of those who entrust to your care the expenditure of their money, or the maintenance of their health? Do not take a heavy responsibility unless you can answer for its discharge before God and man. Do not let false pride stand in the way. Do not let false economy stand in the way. Remember that, if trouble arises, ugly questions will be asked. Who is responsible for the drainage? On what practical experience do you base the consideration that you are competent to deal with this vital question high-handed? If parents, and masters, and builders, and architects, would make themselves sure that they had put to themselves the same questions that might be put before a coroner's jury, if one of their family or clients were struck down by enteric pestilence, we should have taken the first step towards stamping out many a terrible scourge. Is it necessary for yet another and another Curtius to leap into the ever-growing gulf before England sets to work in earnest to prevent preventible disease?

JOHN AHERON, ARCHITECT; AND OTHERS.

IN relation to John Aheron, his patrons, English and Irish, and his works,* we have gleaned the following particulars through several channels not generally accessible. It is quite certain now that he erected Stradbally Hall, Queen's County, and a mansion at Rockforrest, County Cork, the designs for which appear in his "General Treatise of Architecture," along with other buildings throughout Ireland previously to the date of his published work.

Pole Cosby, for whom Stradbally Hall was built, was a descendant of Francis Cosby, who, on the dissolution of the religious houses in Ireland, came into possession of a large property in the ancient parish of Ochmhills, Stradbally. The monastery, with its mills, castles, and lands, containing 345 acres, was granted August 18th, 1592, *in capite* by knights' service, to hold of the Castle of Maryborough, to Francis Cosby, his heirs and assigns, at the annual rent of 17*l.* 6*s.* 3*d.* Irish money, they to find yearly *nine English horsemen*. On the 4th of December, 1609, a new grant was made to Richard, son of Alexander Cosby, who repaired the castle, and removed the parish church from Ochmhills to the town by building a new one, which church, having gone to decay, was rebuilt in 1775 in the general style of that period. The said Richard Cosby also obtained a charter for weekly markets and annual fairs. The old parish church of Ochmhills was converted by Pole Cosby, lord of the soil, into a mausoleum or burying-place for his family. There is little doubt but Aheron was engaged on this work as well as the mansion. The castle spoken of was surrounded by a fosse, but was eventually pulled down by the Cosbies, who built a fortified house in its place; but this also disappeared sometime in the last century. In the year 1771, Cosby, Lord Sydney, commenced the erection of what was intended to be "a noble house," in the language of the times, a little way outside the town, south-west of the ancient castle, but he only lived to see the offices and one wing completed. At the close of the last century the estate, which comprised a highly-ornamented demesne, belonged to Admiral Cosby. In the same neighbourhood, in 1768, and probably during Aheron's life, the Earl of Roden built a family mansion, Brockley Park. This building was erected under the direction of an Italian architect of the name of Ducart. It was raised upon the site of a former one, which was burned down. Aheron gives in his work several designs for charter-schools, and we find that a charter-school was erected about his time in Stradbally. Indeed, the erection of charter-schools in the middle of the last century was very rife all over Ireland. What other particular works Ducart was engaged upon we have yet to learn; but the occurrence of his name and his presence in Ireland go, perhaps, to account for his being at least one of the band of foreign architects and artificers, Italian and German, who were both brought over and invited by members of the Irish nobility, from the middle to nearly the close of the eighteenth century. Several Italian artificers, scagliola and stucco plasterers, made Dublin famous, during the eighteenth century, by the high artistic character of their plaster-work in public buildings and the mansions of the nobility. After a short while, however, the native stucco-workers rivalled them; but the once high excellence of this class of building ornaments and enrichments died out early in the present century in Dublin. Sir Gustavus Hume, of Castle Hume, in the county of Fermanagh, invited over Richard Castles, a German architect, some time between 1732-40. The German obtained extensive practice in Ireland from the nobility, and designed several public buildings in Dublin. He remained in Ireland until his death, well patronised.

Returning to Aheron, we find that another of his patrons was Sir Maurice Crosbie (not Cosby), knt., and two others of the same name, probably relatives. A branch of the Crosbie family lived at one time in the Queen's County, not far from the neighbourhood of the Cosbys, and another patron of Aheron, Periam Pole, lived at Ballyfin, in the same county. The ancestor of Periam Pole obtained possession of the large estate of Ballyfin after the Restoration, 1663, by a grant from the king,—a Sir John Crosbie, its former owner, having forfeited it by espousing the cause of Charles I. Periam Pole died, unmarried, on the 24th of April, 1748, his younger brother succeeding him. This younger brother, William Pole, became a member of the Privy Council in Ireland, and a governor of the Queen's County. He erected several buildings on his estate; made very large improvements; formed extensive gardens, hot-houses, lakes; and in 1771 built the eastern front, consisting of a hall, dining-rooms, drawing-rooms, library, several bed-rooms, and other apartments. Great improvements were projected at the seat of Ballyfin, but they came to a standstill by the death of Lady Sarah Pole in 1780, and her husband in the following year. William Pole having died without issue, being the last representative of his family in Ireland, his estate went by will to his third cousin by his mother, the Hon. William Wesley. Thus Ballyfin passed into the hands of the Mornington family, from whom the Duke of Wellington was descended. The name and arms of the Poles were assumed and allied with the Morningtons, Wesleys, or otherwise Wellesleys. Thus became extinct the Irish branch of the Poles descended from Sir William Pole, of Shute, in Devonshire, and probably of the Cardinal Pole family.

There is every reason for believing that the improvements carried out by William Pole at Ballyfin, were part of those begun by Periam Pole, Aheron's patron, and were originally designed by this architect.

* See p. 843, *ante*.

ANENT ILMINSTER.

A GOVERNMENT officer has been to Ilminster, measuring and making inquiries as to the state of that ill-drained, or rather undrained, town. We have not heard of any official statement being made since his visit, or what may be the extent of his recommendations with a view to improvements. It is several months now since we sounded the alarm, after a careful examination of the high and low places of that irregular town; and though our statements could not be denied, they were, as usual, carped at and poohpoohed by some of the local journals.

The mortality in Ilminster during the past year, if looked into, we think, will be found rather high; but, independently of the number of deaths, we would direct inquiry to the causes. The town, from its situation offers favourable facilities for a ready and thorough system of drainage being carried out. The system of local rule in Ilminster has long needed reorganisation. As it has existed hitherto, the duties seem to have been divided between the churchwardens and the Highway Board. The latter body looked after the roads outside the town, through their district surveyor, who kept them in a fair state of repair. The former body, or shall we say the town council, on whom sanitary matters devolved, doggedly resented being lectured from London, or elsewhere, on improved drainage or water-supply. When these latter authorities were informed that fever still continued in a certain low part of the town, one among their number, who considered himself wiser than the rest, said, "fever and sickness were always in that place, and will always be there." This crushing argument had the desired effect with the majority of the "Do-Nothings in Council," and was supposed to excuse them for doing less. Perhaps the end of the tether is reached at last, and that we have not laboured in vain in honestly drawing attention to the ills of Ilminster.

THE BRIDGES OF LONDON.*

THE iron-work of Blackfriars Bridge was tested as the work proceeded by Mr. Kirkaldy. The specified strength of iron being such as will not increase or diminish in length more than 1-625th part on application of a tensile or compressive strain of 16 tons per inch area. This specification was arrived at on the principle that good iron will bear a strain up to 16 tons per inch within the elastic limit with a regular increase or diminution of dimension of 1-10,000th part of its length per ton per inch. It must be remembered, however, that at the time this specification was drawn the experiments on iron were by no means so full or reliable as those carried out by Mr.

* See p. 958, *ante*.

Kirkaldy within the last six years. The proportion of extension and compression arrived at by Mr. Hodgkinson, from very few experiments, was adopted too generally regardless of the very different qualities of different makes of iron.

It is more usual to specify a breaking strain only; but iron has been permanently injured,—in fact, destroyed for building purposes,—a considerable time before it breaks under experiment. As soon as the elastic limit is passed, the iron is, in fact, destroyed, and the element of time, and a considerable time, too, must enter into the question of what really is the breaking weight. If weights be increased rapidly or at short intervals, the iron will absolutely bear considerably greater weight than would have broken it if left on for a length of time.

In fact, the following elements all bear in an important measure on the question of strength of iron,—namely, elastic limit, weight ultimately borne and time of bearing beyond elastic limit, and also the diminished sectional area at the point of fracture, the contraction of area marking strongly the ductility of the material.

In Southwark Bridge the thrust on the cast-iron arches is about 2¼ tons per inch; in Blackfriars wrought-iron arches the thrust is 3½ tons. A somewhat slighter arch would have been perfectly safe, but it was considered that there would be more and perhaps objectionable vibration with less metal in the ribs. The cross section of Southwark Bridge arches is that of a simple flat plate with insignificant enlargement at the extremities, a form very much wanting in lateral stability, depending, in fact, for lateral rigidity entirely on the cross bracing. In wrought-iron arches, on the other hand, there is great facility for placing the strength principally in the intrados and extrados of the arch giving considerable breadth and lateral strength at those parts, thus placing the material in the most advantageous position to resist not only vertical vibration, but lateral also.

The arches of Westminster Bridge are of peculiar construction; they are not what they appear to be on the external elevation, that is, arches flat at the crown, with sharp curvature at the haunches. The real arch terminates many feet from the apparent springing; the haunches are, in fact, overhanging piers, massive cast-iron work standing as part of the pier corbelled over. The iron work of the arch (not the roadway) is thus made continuous throughout, the effect of which is much to increase the vibration, a vehicle on one arch thus effecting the adjoining arches. This same effect of continuous construction may be observed very strongly in the Victoria Railway Bridge: a train at one end of the bridge causes very considerable vibration at the other end. In Blackfriars Bridge, in order to avoid this effect, the iron work of each arch is made entirely distinct from the iron work of the adjoining arches. No motion can be communicated from one arch to another except through the masonry of the piers.

The granite, the bricks, and the cement used in Blackfriars Bridge were also tested by Mr. Kirkaldy—and specimens are laid on the table. The granite used was from the De Lank quarries, near Bodmin, Cornwall. The following is the analysis:—

ANALYSIS OF DE LANK GRANITES.

	Specimen D. L.	Average of Granites.		
		Maximum.	Minimum.	Ordinary.
Silica	68·85	76·08	66·0	72·8
Alumina.....	23·48	17·77	11·0	15·3
Potash	—	5·83	4·0	6·4
Soda	3·32	2·50	0·0	1·4
Lime	trace	1·50	0·0	0·7
Magnesia ...	trace	2·00	0·0	0·9
Iron Oxide...	1·19	2·50	0·5	1·7
Iron Pyrites	3·18	1·50	0·0	0·0
Loss by Ignition	0·80	—	—	0·8
	100·80			100·00

There is little doubt that the quality of granite depends more on the amount of iron and soda contained than upon any other quality, and the suggestion is thrown out whether more attention should not be given to this point than is usually done.

Blackfriars Temporary Bridge.—This bridge, though but a temporary structure, did duty as one of "The Bridges of London" for five years and a half, and owing to the better gradient, it was found such an improvement upon the old stone bridge, that there was immediately a marked increase of traffic. It may, therefore, deserve a passing notice.

The London, Chatham, and Dover Railway Bridge being in progress, and a much wider space being required for New Blackfriars than was occupied by the old stone bridge, there was not sufficient width between the two to build the temporary bridge with carriage-way in the middle, and footpaths on each side. A two-story bridge was therefore adopted, with carriage-way below of 28 ft. width, the same as the old bridge, and two footpaths above of 9 ft. each, or 2 ft. wider than those replaced. The headway for the carriage traffic was 16 ft.

The carriage-way was 53 ft. above the bed of the river, and the footpath 18 ft. above that, making a total height of 71 ft. Three openings 75 ft. each were left for the river traffic, the road over which was carried by wrought-iron girders.

The carriage-road was the ordinary wood pavement, which answered well with once renewing and occasional patching. It was, no doubt, slippery in certain states of the weather, and required great attention in cleansing and sanding; but, on the whole, it is felt that no other road formation would have been so suitable under all the circumstances, and the experience seemed to show that the final decision to adopt wood pavement was right in this case, notwithstanding the objections to wood pavement, and its admitted inferiority in permanent streets with solid foundation.

Much fear was expressed before the bridge was opened as to its safety and stability, but, on taking down, not a bolt or timber was found disturbed or fractured, and the vibration on the top, though it appeared considerable, was, in fact, only a ¼ in., and singularly enough, the greatest vibration was produced by empty four-wheel cabs.

All the ties and braces were notched on one quarter of their thickness, as well as bolted; this notching injures the timber slightly, but very great rigidity is thereby obtained if well done; in fact, if the timbers be not notched into each other, the mere bolting admits of very considerable lateral play.

It may occur to some that the temporary bridge might have been placed on the up-stream side of the old Blackfriars Bridge, the objections to this were the much greater length of restricted river way, and the interference with property in Albion and Chatham Place.

It was thought desirable to put some limit to the weights to be taken over this bridge. Notice was, therefore, put up that loads drawn by more than four horses would not be allowed to pass. The difficulty, however, was got over, by the drivers generally taking off the third pair of horses at the commencement of the bridge, and going over with the orthodox four.

The time occupied in the erection of this temporary bridge was just over seven months.

The Bridges considered as Works of Art.—Under this fourth head much might be said, but at present it is not for an engineer to lay down the law in a paper to be read before the Institute of Architects.

If an architect has but a barn to build at an expense of a few hundreds, he proves himself a poor architect if he does not put into it some artistic feeling, be it only good proportion; it is his acknowledged duty to do his work artistically,—not necessarily expensively,—but to do it with some feeling for his art. An engineer, on the other hand, may spend millions on a railway, without having one work upon it with any real artistic feeling, either in proportion or ornament; nevertheless he may be a great and a good engineer. It has not hitherto been considered as any essential part of an engineer's duty to do *his* work artistically.

It is by no means intended to be said that no engineering works are artistically good, but such is not far from the case generally; more frequently it is not even aimed at,—at all events, not in the same sense or manner in which an architect's work is intended to be done. An engineer may succeed without intending it, and an architect may fail after the most strenuous efforts. For instance, Smeaton says nothing, and probably thought nothing, of beauty of outline in designing the Eddystone Lighthouse; nevertheless, the outline of that tower is as beautiful a line as can well be drawn. But to return to the subject under consideration—"The Bridges of London." All that shall be attempted shall be to throw out a few suggestions for consideration. First, with regard to London Bridge, acknowledged on all hands to be one of the finest bridges in Europe, there is one point which would perhaps give an unsatisfactory feeling to an engineer rather than to an architect, namely, the concealed skew-back, which leaves the arch apparently standing on a point at the springing; there is no apparent support for the arch. A bold, well-developed springing or skewback gives a feeling of strength and stability, which in this bridge is left to be inferred.

One of the most important considerations in bridge-building is the adoption of a style and design suitable to the locality, and perhaps this may involve more radical and important considerations than at first appear. In the case of London Bridge, you have high ground on the City side, low ground on the Southwark side. The style adopted is Classic in feeling, if not absolutely and properly Classic. This style involves a centre and two sides absolutely alike, or so nearly so that the difference could not be discovered. The difficulty thus arising is got over to some extent by "fudging" the parapet line somewhat, and the road still more, thus acknowledging that the design does not altogether fit the situation. By this means, however, a fall of 3 ft. 6 in. is gained in the road without visible change of external elevation; but even with this gain, the value of the bridge as an engineering work is greatly diminished by the steep approach from the south. The gradient of approach is, in fact, sacrificed to the uniformity of elevation. It is not implied that some other course ought certainly to have been adopted, but the difficulty is thrown out as a matter for consideration. It is, in fact, a case of *uniformity and dignity of design versus utility*. The gradient of the south approach is now 1 in 23; had the drop of the two southern arches been increased, the gradient over the whole might have been 1 in 31,—a difference of vast importance to this heavy traffic.

Waterloo Bridge, again, is a similar case; but there the convenience of approach has been sacrificed to uniformity of elevation, even to a much greater extent. This bridge must be considered not only as Classic in feeling, but as an absolutely Classic structure, utterly rigid and unpliable. The horizontal line is boldly carried right across the river regardless of consequences, and the southern approach is left to accommodate itself as best it can. The gradient of the southern approach is now 1 in 30; it might have been 1 in 50. London Bridge, merely Classic in feeling, can accommodate itself to circumstances to some extent. Waterloo Bridge, absolutely Classic, is rigid and perfectly unaccommodating.

He would have been a bold man who, in building across the Thames at London, would have placed the central point of his bridge as near to the northern shore as the navigation would permit, and then have inclined the sides in the manner most suitable to the ground; but there is a question whether a good engineer and true artist would not be able to build in the manner most suitable to the requirements of the case, and at the same time to make his work express his object with true, noble, and satisfactory artistic feeling.

Even the bare suggestion of a lob-sided structure over the Thames is perhaps too much; nevertheless, it may serve to draw attention to the difficulties, in certain cases, of combining architectural design with utility in bridge-building.

There is one feature in the new Blackfriars Bridge which may be worth a passing notice, as it certainly is not usually adopted, and is believed to be novel. In this bridge, the springing line of arches at the piers is on a higher level than at the abutments. Had the springing line of arches been maintained at the same level throughout, the spandrels of the centre arch would have been 4 ft. deeper than they actually are, involving an awkward disproportion between the small spandrels of the land arches and the large spandrels of the centre arch. This is avoided by lifting the springing of the piers, thus letting the springing line of the arches to a certain extent follow the gradient of the road. This departure from the horizontal line in the springing of the arches probably would never be noticed; it has considerable effect, however, in lightening the central portion and bringing it into harmony with the sides.

The lifting of the springing line not only effects the object of giving better proportioned spandrels, but it gives increased headway for the navigation. This matter of headway became a vital question with the Bridge House Estates Committee in determining the design to be adopted, the question of interference with the navigation finally deciding the choice of a five-arch bridge in preference to one of three arches. At first sight it may seem strange that a bridge

with four piers should interfere with the navigation less than a bridge with only two piers; nevertheless, that is the case in this particular instance, both as regards high and low water. In a three-arch bridge, the headway under the haunches of the large arches would be so low as to render a considerable portion of the arch unavailable, as well as the space occupied by the solid pier itself, and at low water the centre arch alone would be available for navigation. There would, it is true, be a considerable space of water under each side arch, but neither thus separated sufficient for vessels to pass. Whereas, in a five-arch bridge, the higher springing line permits the whole extent of the archway to be used at high water, and at low water the whole space of the three arches are available.

In these remarks it is assumed that both in three- and five-arch designs, the headway under the middle of the centre arch is at a fixed and previously determined level, and that a large arch necessarily has a greater versed sine than the smaller arch, involving a springing at a lower level.

This paper has already occupied too much time to allow of further remarks. Something might have been said as to the various styles adopted for the different bridges, but no information could have been given by such criticisms. Every member of this Institute can form an opinion more to the purpose than anything that might have been said here. These works are before us all: they are not in a far distant country, which only few have the opportunity of visiting.

HENRY CARR.

EXPERIMENTS ON THE STRENGTH OF MATERIALS.

A VARIETY of experiments on the strength of materials were made by Mr. Kirkaldy for the works of the new bridge at Blackfriars, and were referred to by Mr. Carr in his paper. Some of these experiments gave results as follows:—

BRICKS, IN PIERS FOUR COURSES HIGH.

Description of Bricks.	Size of Pier in Bricks.	Mortar.	Failing slightly. Tons per foot super.	Entirely crushed. Tons per foot super.
Common stock recessed	1½ by 1½	Lias lime	17	27
Ditto ditto	1½ by 1½	Ditto	21	30
Red Bricks, machine-made	1½ by 1½	Ditto	20	40
Ditto hand-made	1½ by 1½	Ditto	20	36
Gait	1½ by 1½	Roman cement	24	59
Ditto	1 by 1	Ditto	54	72
Clark's Sudbury machine	1 by 1	Portland	49	76
Uxbridge red, hand-made	1 by 1	Ditto	44	53

STONE CUBES OF TWO INCHES, BEDDED ON SHEET LEAD.

Description.	Failing slightly. Tons per foot super.	Entirely crushed. Tons per foot super.
De Lank granite, Cornish	283	363
Ditto	279	—
Ditto	349	377
Guernsey	276	830
Ditto	761	1,150
Cheesewring, Cornish	295	403
Ditto	194	322
Portland	106	155

A small polished column of red Mull granite, length 6 in., diameter nearly 3 in., was cut through the middle, and the cut faces accurately ground; when tested, packings of pine were placed at each end, and the surfaces, where cut in two, were put together with a little boiled oil. This 3-in. column bore a strain of 60 tons, or 8½ tons per square inch, 1,260 tons per square foot, or the weight of a column 16,380 ft. high.

An experiment was made to test the effect of a small area of iron pressing on a surface of De Lank granite. A cube of 1-in. wrought iron was placed between two blocks of granite, 6 in. by 6 in. by 5 in.; a packing of ¼ in. of pine was placed between the granite and the machine, and between the iron cube and granite. One of the blocks was split with a pressure of 50 tons; the block which was not injured was again submitted to pressure with another cube: it was then fractured with a pressure of 52 tons. The iron cubes were reduced in thickness one-sixth, with an equivalent lateral extension.

It was desired to see what would be the effect of great pressure on the skewback stones. A stone was worked one-fourth scale, and a corresponding portion of arch-rib made; the two were bedded together with lead run in between, in the same manner as proposed for the arches themselves. They were then gradually submitted to a pressure of 200 tons, but without any effect except extrusion of the lead; the iron, however, with 18 tons per inch, seemed to have quite as much as it could carry. Being all to one-fourth scale, the area under pressure was one-sixteenth the real size; the pressure was therefore equivalent to 3,200 tons in the bridge itself, the actual pressure in work being under 400 tons.

Gun-metal cramps were also tested, the result being the rejection of several mixtures of metal submitted by the contractors, and an increase of strength obtained from 17,519 lb. per inch area to 28,883 lb. (7¾ to nearly 13 tons.)

In order to test the strength of timber used as struts, two whole balk, 20 ft. in length and 13 in. square, were submitted to end compression. The red timber crippled with 138 tons, or 112 tons per foot area, and the white with 147 tons, or 126 tons per foot area, the reduction in length being in one case ⅜ in., in the other ½ in. Specimens of the fractures are now exhibited.

Portland cement was also tested, the standard of the Metropolitan Board of Works being adopted, 110 lb. weight per bushel, and 500 lb. tensile power on 2¼ in. area; some results obtained were as high as 733 lb. on the 2¼ in.

Experiments were made on the iron from time to time, but the specified strength was not fully attained; it was, perhaps, pitched rather too high for such work. The extension of $\frac{1}{16}$th part of the length was given by strains varying from 13 tons to 15 tons instead of 16 tons, but even with this, the elastic limit is just about four times the working load, which is ample allowance for safety, taking into account a very large deterioration from time and corrosion.

The above figures are stated in round numbers. The results, as given by Mr. Kirkaldy, are in every respect most accurate and minute, but high numbers of pounds instead of tons, and long decimals are not suitable for such a sketch as this.

THE NEW FOREIGN CATTLE MARKET.

THIS week a great public institution, called into existence by the exigencies of the vast and increasing population of London, commences what it may be believed will prove a long and useful career: we refer to the opening for the reception of importations of live stock, at the new Foreign Cattle Market at Deptford, to which use the extensive premises formerly employed as one of the Royal ship-building and dock-yards are to be hereafter appropriated.

At the time this Government property was transferred it was more than whispered that, on the one hand, the vendors had received much less than its value, and that afterwards the Corporation of London had paid much more for it than they should have done. An intervening party between Government as vendors and the Corporation as buyers netted, it has been alleged, a very handsome sum by the transaction. If the Corporation lost time and opportunity in the first steps of the acquisition, they have certainly not been chargeable with laxity since. The very extensive works necessary, in connecting buildings, and internal fittings, and landing jetties, have been commenced and completed in a space of little more than six months.

The ceremonial opening will not take place for some little time to come; but the foreign cattle salesmen and importers are naturally impatient and desirous to have the market opened for the Christmas traffic, and nearly a third of the accommodation to be provided is now practically finished, and business will be commenced this week, and more fully on Monday. Visitors, unless furnished with duly-signed orders, are rigidly excluded from the premises, which for several weeks past have been a scene of great activity. During the last week there have been above 1,000 men employed, with forty horses, and a number of barges, steam cranes, and other appliances.

In constructing the market, the six covered building-slips of the old dockyard have been utilised and connected with each other by ranges of new erection. Some of the sheds are roofed with timber, and others with iron. One of them almost vies in width of span, height, and stateliness with the notable St. Pancras Railway Station. The capitals of the tall columns are connected with the principals of the roof by large well-designed open spandrels, the whole structure having internally an imposing effect. This slip is upwards of 400 ft. long and was 19 ft. deep.

The area of the cattle-market, including the space occupied by the covered pens, slaughter-houses, and offices, is a little more than 28 acres. The utilisation of the covered slips and other buildings has doubtless enabled the corporation to construct the market at a very much smaller cost than would have been necessary if everything had been done as *de novo*, or if the building materials only had been used. It almost seems an open question, however, whether it would not have been better to have laid out the erections upon a plan independent of the position of some, at least, of the slips,—those particularly that radiate from the floating basin in the yard round which they are ranged. This basin is of nearly an acre in extent, and is closed at the inner end of the entrance by a caisson bridge, and crossed by another bridge at the river's edge. The irregular relative positions of the slips has necessitated numerous angles in the fittings of the plans, which cause waste of space that would not have occurred in buildings of rectangular form. One of the series of connected pens, and much the largest, has in its outline five angles, exclusive of the two on the river front. The pens for cattle and sheep respectively are intermixed, not individually but in series, throughout the whole of the covered area, so as to be readily accessible to the cargoes of cattle or sheep respectively as landed at the different jetties. All round the outer wall of the covered pens there will be a roadway 24 ft. wide, and they are all also provided with longitudinal and lateral roadways of 20 ft. wide, with gangways of 6 ft. wide intervening. With 30 ft. superficial for each head of cattle, and 5 ft. superficial for each sheep, the accommodation is as follows:—

	Cattle.	Sheep.
Block AA	1,570	3,200
BB	1,231	—
CC	550	4,560
DD	491	3,750
Total	3,892	11,510

There is, in addition, a large area of open-air yard room that may be available if need require.

The new connecting buildings are much less lofty than the slips, but ample provision is made for their thorough ventilation by ranges of dormer windows glazed with louvres of rough plate-glass; the alternate windows are hinged, and may be opened at pleasure so as to send copious streams of air through the building in any direction. These new buildings are 155 ft. wide and have bound roofs, in three spans. The columns are 15 ft. high to the bottom of the supporting beams. The cattle-pens are strong timber erections, and furnished throughout with ranges of mangers with sparred bottoms. Over the back portions of the mangers are ranges of water-troughs, also of stout deal. The sheep-pens are divided by upright posts and longitudinal iron rods, the upper rod 1¼ in. in diameter, the others ½ in. Each of the sheep-pens is furnished with a water-trough and an iron feeding-rack in the centre, 9 ft. long by 30 in. wide at the top, reduced to a circle of about 3 in. radius at the bottom. Pulleys are hung to spars overhead, by which the racks can be raised or lowered at pleasure.

Some of the blocks of pens nearest the river are so arranged that in case of diseased cattle being imported they may be completely detached from the others, and slaughtered and boiled down, without contact, in the buildings provided for the purpose. There is but little ground for apprehension of mischief from the importation of disease, the foot and mouth disorder and pleuro-pneumonia being alleged to be peculiar to English-bred stock.

There is, in ranges of former workshops, abundant accommodation for slaughter-houses, of which there are two, 220 ft. long by 60 ft. wide. They are fitted with the best mechanical appliances, in cranes for hoisting the carcasses, and travelling pulleys for moving the suspended carcasses from place to place. A range of buildings, formerly boat-houses, will be used as

slaughter-houses for sheep, for which they are well adapted.

The live stock will be landed at three jetties, placed at equal distances from each other on the river front. These jetties are 20 ft. wide between their strong bulwarks. At about 100 ft. from the quay the jetties fork, and form an equilateral triangle of 100 ft. on the side. The river has been dredged, so that there is a depth of about 16 ft. at low water in front of the jetty. There is a low-water landing-platform, and inclines from it to the upper level, with strong cross fillets for foothold: cargoes may thus, as may be seen, be landed at low as well as at high water. The angular roadways on the jetties may be shut off from each other, and there are means for penning a large number of sheep or cattle on the jetty if their transshipment should be desired. A foot-gangway, 6 ft. wide, gives access to the front, without need to use the cattle road. The jetties are excellent examples of strong, well-put-together timber-work; the piles, which are of sound Baltic timber, are from 40 ft. to 45 ft. long. The outer angles of the jetties are protected by strong dolphin piers, placed as avant-guards. Each of these protectors has fourteen piles, stoutly braced and bound together, so as to resist as one piece.

In addition to the buildings appropriated to the accommodation of the cattle and sheep, to slaughter-houses, and to other purposes, there are numerous other buildings in the yard for which an ultimate profitable use will doubtless be found. A long range of these is being converted into van-sheds and stables, for the accommodation of dealers and others having business at the market. A house for the provision of refreshments will doubtless be found necessary, and for this there are ample premises.

The whole works are being executed, under contract, by Messrs. Browne & Robinson, of Worship-street, Finsbury, by whom they have been completed thus far in what appears to be a very creditable manner. The remaining third of the accommodation will doubtless be ready for use as soon as required. The demands for space will be gradual; and mean time there are ample facilities provided for relieving such a fleet as may present itself of the cargoes they bring of Christmas cheer.

THE THREE SCHOOLS.

AT a meeting of the Architectural Association, on Friday evening, the 1st of December, a paper was read by Mr. Wyke Bayliss, F.S.A., entitled "The Three Schools; or, the Distinctive Aims of Classic, Mediæval, and Modern Art." The lecturer commenced by stating that the truest reverence for all masters and teachers was shown, not by slavish or any following by choice of their modes and peculiarities, but by imbibing their spirit and expressing under the leading of personal delight strong and genuine feelings, such as gave the giants of other days their vigour and power. To suppose our age barren of the impulses that have made the fine arts necessary to those who could only speak out their nature by their means, or to suppose that imitation is the happiest method of strengthening new voices and rendering them firm and sure; both are contradicted by our perceptions and our hopes. The present and the future are then the best prospect for the choice of all. To the artist especially may be said,—"Look back, revere, and learn; look around and forward, and act." Mr. Bayliss then proceeded to describe the aims of high art in general, quoting with approval the terse definition by Abbé Felix at Notre Dame,—"Expression of ideal beauty under a created form;" the seeking out and apprehending of what commends itself to our best selves as (so to speak) the reflection of a Divine beauty in persons and things, and the manifestation of that beauty to others, looking or listening. In this sense Greek art,—speaking specially of its sculpture,—the division of the un-phonetic arts that strikes us now-a-days as that through which the Greek mind found some of its best expression, was one of the greatest schools the world has witnessed, marked by the pre-eminent sanity of true genius, by fine insight and creative power; a school unsurpassable within the limits of its special aims till the powers of its artists are exceeded, or their courage, what we may fairly call their heroism, has been outdone. These aims were the rendering of the ideal type rather than the individual,—the fullest exposition of special characters of *bodily beauty*, not necessarily realised in actual mankind, but by a fine eclecticism drawn from human forms; and perfected by the instincts which saw,—in every actual example of strength, manly grace, or delicate beauty,—only some faint echo of a still more perfect beauty, with a possible infinitude of still higher grades of excellence; also, an entire elimination of passion, a subjugation of terror or wonder, or sense of physical endurance, all of set purpose; the individuality that might be exhibited by the delineation of special character or emotion being beside the aims of these strivers after a rounded perfection,—bathed in a sunny gladness, or at least unperturbed by the anxieties, sorrows, or woes that are permitted, without conveying a sense of special imperfection, to affect modern types of human character. In time this truly great art, inspired by the true nature of a most able and most refined people, began a course of decadence ending in impotence and inanity; the art, sustained no longer by the dignified self-respect, and the pure and vivid intelligence of its most perfect periods, took its lowered and still lowering tone from the society that was the public of the artists,—impressing them, as always, more strongly than being impressed by them in directions out of the line of ordinary preference,—the artist being rarely the preacher or the apostle, but mainly the exponent,—the mirror of the tendency of his time. The want of power to touch and mould some of the finer qualities possible to human kind, and the absence of emotion,—the coldness,—in reality not incompatible with the extremest sensuality,—may seem to account for the corruption of the religious system, and with it of the life and then the arts of antiquity.

The lecturer contrasted, with the character and aims of the art which he had been describing, that which he ventured for the sake of broad distinction to name the Mediæval;—rising after the long twilight and even deeper glooms of many centuries that followed the downfall of Rome, and long maintaining at least a traditional hold on the habits of civilised nations becoming wholly a thing of the past only in presence of the new tendencies afterwards noticed. This second in matter of time of the two greatest extinct schools has had for its main aim the expression of *passion*, of special individual character,—not the type, but the man. Deriving its inspiration from the moral and intellectual atmosphere prevalent at the time; full of the self-mortifying, body-despising ideals, some of the natural products of which were the Mendicant orders, with their constantly new endeavours after emaciation of the body. Thus inspired, the art manifested at first a daring disregard of beauty, and dared to bring suffering into the calm domain, and to transfigure at the same time self-inflicted pain into the natural image of true saintly virtue. All the marks of a great school of painting were, however, here;—not least, that power of the school over the individual artist, the compelling of men of great power, superbly endowed with the gifts of artistic feeling and expression, to a certain choice of subject and certain modes of dealing with it. No personal aberrations from the highest standards of moral excellence could blind the minds of some of the great Italian painters to the fact,—that in their religious art the most complete tenderness, mingled with ineffable purity, were the signs of high attainment and thorough mastership. Yet in this art,—less the amusement of the idle or the privilege of the few, the high-born or high-taught, than the common possession of church-haunting peoples,—there lurked the sources of a decay as complete as that which extinguished the once so-thoroughly-living Classic art; and in the gradual decline towards an earthly sensuous beauty, or a cold, mechanical dexterity, or tawdry meretricious display, were exhibited the signs of the lessened hold of the great original inspiration that had stirred the hearts and guided the hands of the great leaders of the school.

Then the lecturer turned to Modern art: deriving its impulse from the study and love of the world of nature; affording beauty without a trace of sensuality, and all the signs of passion without suffering or sin. To Claude, Cuyp, and Paul Potter be the honour of having first looked at nature so as to obtain from the delineation of landscape beauty the expression of special sentiment, as also to state, in unmistakable terms, that the universe is, in its beauty, the expression of the mind and will of God, and thus to lead to that sympathy with the forms, the fleeting expressions, the open mystery of nature, that has grown with the years since they died. The broad basis of this modern art, and its alliance with new types of tenderness and pity, and humble peace, and sorrow without despair; its endeavour, by landscape painting, to interpret constantly the wonderful variety, the inexhaustible vitality, and the grandeur and grace lodged in even the inanimate world, should lead us to regard not unhopefully the future in view of such a present. The existence of a distinct school with an aim of its own is a great point in any augury, showing that the old course is again being followed, and that the not-yet-perfectly-trained powers are training themselves by actual practice to attempt the ever-renewed, ever-rebegun interpretation of the world around us, the work of the true artist. Such artists nowadays, in view of their special field and task, may, by the honest labour of pure hearts, gain the right to invoke Nature in the words of Dante: "O splendour of the living light eternal! O turn thy holy eyes towards thy faithful ones; and show forthwith a power quite strange to us, the results of some of the teachings of that wonderful monitress."

A vote of thanks was passed by acclamation to Mr. Bayliss for his eloquent and outspoken lecture; and a short discussion followed on the copyism and mercenary character of modern art; on the tendency manifested to give modern painting only of all the fine arts the name of art; and on the necessity of some strong dogmatic belief and enthusiasm, to render possible a school of religious art (an assertion much disputed). Mr. Bayliss replied,—As to the painters of the English school, from personal knowledge of many of them, he could say, without hesitation, that, if permitted to pursue their art without hope of great rewards, they find therein so keen a delight that it would still remain their pursuit; and this, however regarded or explained, can hardly be called mercenary. He had been led in his paper to speak of the Classic art of sculpture, the Mediæval of painting, the Modern of painting,—as being personally better acquainted with their details, and because it seemed to him that in these arts the aims of the respective artists found some of their fullest expression. Of modern architecture, it would be impossible to speak as of a school: there did not appear to him that distinctness of aim—special to any considerable section of architects nowadays—that would lead to any large development different in nature from the old styles of architecture, dead for ever, though apparently alive, as the result of laborious endeavours after continuous resuscitation; it would be a great satisfaction to every one to see such a school, as distinguished from the imitations, followings, or caprices in the architecture of to-day. Of the dangers menacing what he had called the modern art of painting, he thought the main perils were in imitation of either of the defunct schools, introducing a confused eclecticism. The imitation of the acknowledged defects of early painters, such as bad anatomy, defective light and shadow, is most destructive to that sense of loyalty to a man's own best sight and knowledge, which is the finest test of his fitness for a leader in any art work. In the best works of the best British painters, regarded by him as by far the best set of minds now engaged in creative art in any country, he could detect the qualities that had gone to make the perfection of the older schools, and something more; and that something was—*nature*.

"HYGIÈNE PUBLIQUE EN ANGLETERRE."

UNDER this title M. César Daly has printed, in the *Revue Générale de l'Architecture*, some observations on the address delivered by the President of the Health Department at the last congress of the Social Science Association. We look to being excused for giving currency to some personal references, in consideration of the interest of the remarks themselves:—The annual meeting of the members of the National Association for the Promotion of Social Science, says M. Daly, was held this year, in the month of October, in the city of Leeds, one of the most active industrial centres in England. The Health section was presided over by George Godwin, director of the *Builder*. The sitting of the Department was opened with a discourse by the president on Public Health, a subject to which he has devoted himself for long years with most praiseworthy perseverance and merited success. This address

was essentially English, in the best sense of the word; that is to say, full of simplicity and of positive facts requiring to be known, and yet comprehensive, and recalled to the audience the position held in the whole group of subjects by the vast and important question of Public Health. Mr. Godwin examined it successively in various points of view. Remarkably practical, the discourse was not the less essentially elevated in tone. Let us hope that the impulse given in France to local initiation by the recent reconstitution of our *conseils généraux* will lead us quickly both to habits of private initiation more active and more general than now, and to the organisation of those free societies which have contributed so much elsewhere to the useful study of those questions of public interest which the English do not fear to call by their true name,—questions of Social Science. How is it that the English have kept the primitive and exact sense of the term Social Science, while we have brought ourselves to be afraid of it? Shall we for ever be the victims of words?

Social science is the highest, the noblest, and the most useful science there is or can be: it is the science of the general interests of all human society, neither more nor less. It is because the public health is a general interest,—that is to say, social, of the first order,—that the National Association, established in favour of the progress of social science, attaches to it an importance so considerable. Let us all, then, concern ourselves with social science,—that is to say, with the study of the laws that govern the interest of man in society, and which has for its object the development of order and the general welfare as well as that of our moral and intellectual state. Let us call all disorder by its true name,—*anti-socialism*.

Mr. Godwin has touched successively, in his address, on all the branches of public sanitation; but the prompt removal and useful application of the refuse of towns and the products of the sewers appear to us the capital problem first requiring to be solved. The solution of that question alone will immensely facilitate that of the others. The necessity of providing means of recreation,—healthful both physically and morally,—for the poorer classes, as well as the question how to lead them from the tavern and other evil places, did not escape the speaker. The connexion of all the social classes in our day amongst civilised peoples is intimate: all are equal before epidemics and revolutions,—all are struck by them,—all suffer.

THE CLARENDON HOTEL, BRIGHTON.

This new building at the bottom of East-street, is fast advancing towards completion. The architect is Mr. John Giles, of Craven-street, Strand, and the general contractor, Mr. James Rankin, of Askell-crescent, Hammersmith. The ground occupied measures 80 ft. by 57 ft., and the height of the entire structure (five stories) from footings to ridge is nearly 70 ft. The general elevation, of plain Italian character, is carried out in Portland cement, with balustrade above the blocking, broken by ornamental dormers, which fall back into a Mansard roof; the ridge has an ornamental iron cresting; the one pair floor has a narrow continuous balcony, and the two-pair windows separate balconets in the same material. The principal entrance is in the centre of the East-street bow. The hall, which is almost square, is laid with ornamental tiles. On the right is the smoking-room, some 20 ft. by 40 ft., with large windows opening to the ground overlooking the parade, with an uninterrupted view of the sea front from pier to pier. Immediately in front of the hall-entrance is a wide and handsome well-staircase, illuminated by a lantern in the roof. On the side of the vestibule opposite the coffee-room is the hotel bar, and immediately inside the door is a bell-indicator, of American invention, by which the hall porter can instantly tell what bell is rung in any part of the house, and can then, by means of corresponding speaking-tubes, communicate with the servants of that particular floor, and thus rapid attendance will be secured, and all bustle and confusion prevented. On the East-street front there are two shops, one intended as a tobacconist's, and the other as a hairdresser's, both having communication with the hotel for the convenience of its visitors. Passing by a passage at the rear of these we come to the public bar. Proceeding up to the next floor, we find a coffee-room, immediately over the smoking-room, and of the same dimensions, with a reading-room attached, occupying together the whole southern front of the floor; whilst the northern front is taken up by two billiard-rooms; and the east and west by sitting-rooms, of which there are five. The furnishing throughout has been entrusted to Messrs. Atkinson, of Westminster Bridge-road, whilst the Venetian blinds were supplied by Mr. Macfarlane, East-street; the clocks and chimney ornaments—many of which are superb—by Mr. Boxell, King's-road; the chandeliers by Mr. Gardner, of the Strand; and the gas-fitting has been carried out by Mr. Stead, of St. John's-wood. For the cooking apparatus in the kitchen, Messrs. Adams, of Regent-street, have been paid 330*l*. Mr. W. Oldrey acts as clerk of the works and foreman.

We may add, as a novelty, that all the furniture of doors, windows, bar-fittings, &c., are plated with "*pure nickel*,"—a process brought by the architect and some friends from America last year. It has the appearance of silver, at less than half the cost, and will probably be much used in building operations, not being liable to tarnish or rust like silver.

DEFECTS IN THE SANITARY AND BUILDING ACTS.

Dr. Liddle, the medical officer of health for Whitechapel, calls public attention to defects in the Sanitary and Building Acts, affecting the dwellings of the poor in the metropolis. Recently he brought before the Whitechapel district Board of Works a report, in which he intimated the fact that seven new houses were in course of formation in Nelson-court, Whitechapel-road. Being requested to make an inspection of the locality, he subsequently presented the following minute:—

"Nelson-court is entered from the Whitechapel-road by a narrow entrance of less than 2 ft. in width, and the width of the court opposite to the houses in the course of erection is only 6 ft. 9 in. Independently of the want of a due proportion of light and air for the rooms facing the court, the rooms themselves are very faultily constructed. In the first place, there are no passages to the houses, but the entrance doors open directly from the court into the front rooms. Secondly, From the construction of the staircases, the foul air of the lower rooms will pass directly into the rooms above, the staircases forming the ventilating shafts to the lower rooms. Thirdly. There is no other way for the inhabitants of the front and upper rooms to pass into the backyards, except through the back rooms of the houses,—a most indecent practice. For the above reasons, I consider that if these houses are completed in accordance with the plan deposited, they will be unfit for habitation. If these houses are being built in conformity with the provisions of the Building Act, then it is full time that a new Building Act was in force, so that the erection of similarly constructed houses may be prevented. No builder should be allowed to erect dwelling-houses unless the local authority approve of the plans in all their details. A power of appeal to a central authority might be allowed to the builder, if his plans were not approved by the Local Board."

Upon the reading of this report, the Whitechapel Board of Works directed that a communication should be addressed to the Metropolitan Board of Works, explaining the facts, and enclosing a copy of the medical officer's report. The clerk accordingly wrote to the architect of the Metropolitan Board, and in his letter stated that the Whitechapel Board were of opinion that houses such as those proposed to be erected are highly objectionable in such a locality.

In reply, Mr. Vulliamy wrote:—

"I quite concur in the view taken, that the erection of buildings in so limited a space should be restricted as much as possible, but I do not see how I can bring the subject before the Metropolitan Board with any likelihood of a satisfactory result. It appears to me that unless your district board take action under the 74th section of the Metropolis Local Management Amendment Act, and compensate the proprietor for widening the existing public ways, there is nothing to prevent him from erecting a row of buildings in Little North-street to the general line of frontage thereof, nor upon the old foundations in Nelson-court, subject, of course, to the provisions of the Building Act, 1855."

Dr. Liddle, in his quarterly report on the sanitary condition of his district, just presented, observes that Mr. Vulliamy's letter would have been more satisfactory if the writer had stated, in addition to his own opinion, that the erection of houses in so limited a space should be restricted; that the Metropolitan Board intended to insert a clause in the new Building Bill which should prohibit the erection of new houses in any locality which has less space for air, light, and ventilation than 20 ft. in width; and that every newly-erected house, whether in a new or old court, should have that amount of space in front, and a space of at least 10 ft. square in the rear. So soon as the working classes are thoroughly alive to the importance of living in healthy habitations, and the ratepayers become convinced that it is much cheaper to prevent disease than to support the sick and provide for widows and orphans, then something more effectual will be done than has hitherto been accomplished, both in the prevention of the erection of unhealthy dwellings and the taking down of such as now exist. From the letter of the architect of the Metropolitan Board, it would appear that the vested rights of those persons who embark in building speculations are protected, while the vested rights of the poor, which are their health and comfort, are disregarded. Can anything be more absurd than to prohibit the erection of buildings in newly-formed places unless such places are of a prescribed width, while new houses are permitted to be erected upon old foundations without regard to the width of the court or alley? It is either necessary for health or it is not so, to build houses which shall have a width of 20 ft. in front; but if such an open space be necessary, then it cannot signify whether houses are erected in new or old places.

Dr. Liddle adds the expression of a hope that the Bill for the Amendment of the Building Act will meet with better success on its introduction in the approaching session than has hitherto attended it. As the sanitary clauses of this Bill are, however, very defective, Dr. Liddle thinks it might be better to omit them altogether from the new Bill, and incorporate them in a new sanitary Bill, which should be taken charge of by a member of the Government. The Metropolis Buildings and Management Bill should therefore be divided into two parts,—the one relating to the profession of an architect and the business of a builder, and the other to all the sanitary requirements of a dwelling-house. The former part might advantageously be left in the hands of the Metropolitan Board, and the latter should be undertaken by the Government. It would also be necessary to obtain provisions for giving facilities to local Boards to purchase, under compulsory powers, any property that is required for the purposes of the Acts which they are empowered to execute. The 47th section of the Sanitary Act, 1866, appears to give such power; but it is so worded as not to be easily understood, and is, therefore, not likely to be enforced. In the framing of the clauses of a new sanitary Act, relating to dwellings, it should be enacted that such structural alterations made in any property held on lease as may be ordered by any local Board for the purpose of rendering such property fit for habitation, shall not, if carried out to the satisfaction of such authority, vitiate the lease.

THE ROMAN VILLA AT NORTHLEIGH.

We mentioned last week the endeavours that were being made to induce the preservation of these remains of Roman art and civilisation in the immediate neighbourhood of Oxford. There are few, if any, of the very few perfect Roman villas in England which can compare with this one, either as to size or as to general preservation, and there is certainly not one which is more appositely situated for being studied by those interested in the ancient civilisation and art of which it is such a valuable relic. Such, however, is the present condition of the remains, that unless some immediate steps be taken, the care and attention paid to their preservation when originally uncovered, in 1815–16, will have been in vain.

Mr. J. P. Earwaker writes to us, stating that the remains, as at present existing, consist of the foundation-walls of a very extensive quadrangle, with its adjacent rooms and porticos, and of one or two chambers, in a more or less well-preserved state. On the north side this quadrangle measures 167 ft. in length; on the east side, 212 ft.; on the south side, 153 ft.; and on the west side, 186 ft. The number of the chambers which were either wholly or partially uncovered amounts to over sixty, many of which had their tesselated floors well preserved, whilst in others only slight traces of the tesseræ were discoverable. At present these walls are little more than grassy mounds: they have been neglected and uncared for, and openly exposed to the weather, and in many cases it is almost impossible to follow the plan of the quadrangle and adjacent rooms.

Of the few chambers which were discovered in a more or less perfect state, the most important is that situated in the north-west corner of the quadrangle. This room is 33 ft. long and 20 ft. broad, with walls of more than 3 ft. in thickness. Below the floor of this room is the hypocaust, extremely well preserved, and the pillars made of tiles which support the floor are still

quite perfect. The funnels in the walls by which the hot air flowed into the rooms, and the flues by which the smoke of the fire escaped, as well as the præfarnium, or place where the wood fire was made in the hypocaust, are well shown. There are seventy-nine pillars, in all, which support the tesselated pavement, and raise it some 3 ft. above the floor of the hypocaust. This tesselated pavement, which is of a very simple and elegant pattern, was, when discovered, almost perfect.

It is to be hoped that the Duke of Marlborough, on whose estate these remains are, will at once give such instructions as will insure their preservation.

BAALBEK.

WE drew attention some time ago to the condition of the ruins of Baalbek, and the want of preservative measures. Mr. Tyrwhitt Drake now repeats the warning, asks for a small subscription in England, and invites "some architect or civil engineer, intending to visit Palestine during the ensuing tourist season, to stay a few days and see the thing done."

The work would require to be executed with discretion. Iron bars and bands, such as Mr. Drake suggests, sometimes prove very treacherous friends.

FALL OF A STAIRCASE, WORCESTER.

A FEW days ago an accident of a startling nature, fortunately unattended with serious results, occurred at the General Infirmary, Worcester. The stone winding staircase, leading from the floor of the central part of the building to the upper wards, suddenly gave way, and falling upon that portion of the staircase which passes immediately underneath it, carried that away with it also, the whole *débris* falling to the ground with a loud crash, from a height of something like 20 ft. Mr. C. E. Hardyman (house surgeon), and Mr. C. A. Sheppard (surgeon), were descending the staircase at the time, and finding the stonework giving way underneath them, with great presence of mind sprang upon the landing a few feet below, and thus averted what otherwise would have been a most serious casualty. We shall be glad to have some particulars of the construction of the stairs in question.

THE MEASUREMENT OF STRESSES.

IN the course of a paper "On the Stresses of Rigid Arches, and other Curved Structures," by Mr. William Bell, read at the Institution of Civil Engineers on the 5th inst., the author proposed to measure stresses by direct observation of the extension or compression of a small length of the material of a structure. For a stress of 1-5th ton per square inch, the extension of a length of 50 in. of wrought iron was $\frac{1}{1800}$ of an inch, which, if magnified fifty times, would be read as $\frac{1}{36}$ of an inch by the eye. During the testing of a structure, two microscopes, magnifying fifty diameters, with scales in their eye-pieces, fixed about 50 in. apart, would measure stresses of 1-5th of a ton per square inch in the most direct manner, and the stresses could be measured at the critical points of a structure.

The author thought that this method of observation might even be useful in another way; if, as was probable, inferior kinds of wrought iron approached to cast iron in the scale of their extensibility under moderate stresses. By taking an observation where the stress could be accurately determined by calculation, the quality of the iron which had been used in a structure might be ascertained.

THE ROYAL ACADEMY MEDALS.

THE medals and other prizes were distributed by the president on Saturday evening last. The following is a list of the awards:—

For the best historical painting—subject, one of the acts of mercy treated Scripturally; gold medal and books,—Miss Jessie Macgregor.

Best historical group in sculpture—subject, Ulysses drawing the arrow from the foot of Tydides; gold medal and books,—Robert Stocks.

Best design in architecture—subject, design for a building to accommodate the learned societies; gold medal, books, and a scholarship of 25*l.*,—William Goldsworth Davie.

Best painting of a landscape—subject, "Early Morning," the Turner gold medal,—Alfred Fitzwalter Grace.

Best copy made in the School of Painting of the Countess of Grammont, by Sir Peter Lely,—Robert William Wright.

Best drawing from the life; silver medal and books,—Frederick George Cotman.

Second best drawing from the life; silver medal,—Thomas Matthew Rooke.

Best drawing from the antique; silver medal and books,—Miss Julia Cecilia Smith.

Second best drawing from the antique; silver medal,—Charles Edward Black.

Third best drawing from the antique; silver medal,—Miss Julia Bracewell Folkard.

Best model from the antique, silver medal and books,—William J. S. Webber.

Second best model from the antique, silver medal,—Edward Francis Theed.

Best restoration of an antique torso, silver medal,—Edward Francis Theed.

Best architectural drawing of a section and plan of the round portion of the Temple Church, silver medal, with books,—Arthur Hill.

Best drawing in perspective and sciography, silver medal,—Alexander Henry Korsey.

The one-year travelling studentship in architecture,—R. Selden Wornum.

Best drawing executed in the antique school during the year, 10*l.*,—Charles Edward Black.

METROPOLITAN CAUSEWAYS.

INCREASING yearly in extent, this great city discovers in its outlying portions a vastly improved character in the style of buildings, as well as in the allineation and breadth of new thoroughfares; whilst the old centres of population remain in most cases as originally constructed, in zigzags of lanes, streets, and courts, *without direct lines of intercommunication*, and are thus isolated from public traffic. It might be supposed that the most central districts should be of the greatest value; whereas, that portion of the great W. C. district lying between the lines of Regent-street and St. Martin's-lane, Oxford-street and Charing-cross, has sunk into slums of poverty and discredit, simply for the want of a great leading thoroughfare from north to south, to connect the leading traverse line of Tottenham-court-road with Trafalgar-square, which may be termed the head centre of London.

A new spirit of improvement is now being evidenced by the Board of Works in the proposed grand routes which are designed to permeate the metropolis, from the centre to east, north-east, and south-east, and are to extend for several miles, and to cost *two millions* of money. These are, indeed, stupendous works; but will they not pay better than ventures in foreign mines or railways, — many of which singly have swallowed double the capital which it is here proposed to be invested in making those blemishes on the largest city in the world the abodes of health instead of disease; thus converting filthy slums into valuable commercial quarters, and opening out free intercourse between the heart and lungs of the City? Whether the great north street be conducted *vid* Crown-street and Newport Market, by the eastern side of Leicester-square, and through the barrack-yard to the west of the National Gallery, or that it issue out in Hemmings-row, opposite St. Martin's Church, matters little, provided the causeway be 80 ft., or at least 70 ft. wide, and nearly direct. Such an arterial duct in this morbid portion of the *corpus civile* would not only infuse life and health, but also lead to the ornamentation and dignity of those now somnolent districts.

Of works already carried out, the most palpable is the opening out of Park-lane through Hamilton-place. Although only an outer boulevard, it is the only traverse route for a length of nearly two miles between the two great leading West-end thoroughfares, Bayswater and Oxford-street, Kensington and Piccadilly; and perhaps it may be permitted to him who, through the *Builder*, first indicated the opening of Park-lane, to suggest further that this most utilitarian improvement is still incomplete.

From a point nearly in direction with Great Cumberland-street, and proximate to the noble Edgware-road, it skirts the Park, and issues out into Piccadilly at right angles! Now, if possible, this ought not to be so; and, as Grosvenor-place presents the nearest north and south important line of communication, it is at once palpable that, by the continuation of Park-lane across the small angle of the Green Park, and a concurrent angle of Buckingham Palace Gardens as far as Chapel-street, or even only so far as Halkin-street, a grand continuation of this useful and highly aristocratic thoroughfare might be assured to the public at large.*

As a connecting link between Tyburnia and Belgravia such a route would be invaluable; and then, as to the cribbed and confined appearance of the Green Park on one side, and of Grosvenor-place on the other, the abatement of the hideous dead wall (for a portion of its extent) and the substitution of a strong iron railing (something similar to that near Hyde Park-corner), would lend enchantment to the view from all sides.

Excepting the small angle excised from Park and Gardens, no invasion of public or private rights need be feared, for the causeway, railed off, would not reduce apparent extent, but rather would seem to expand it.

The removal of heavy, old, and *unseemly* dead brick walls from the *alentours* of all our parks has cheered the public mind and enlarged their privileges; therefore, in all such cases, the improvement ought to be carried out, wherever private interests do not reasonably and legally object to it.

Whilst so near the object, it may not be thought unreasonable to allude to the unhappy position of the Wellington statue. An equestrian figure mast-headed, raised 120 feet above the visual horizon, looks like a caricature—like a vane on a large scale,—placed on the top of an arch too! Some arch wag must have suggested it, in order to discredit the sculptor, whilst appearing to elevate his work. Cannot a happier place be found, and a block of Irish granite whereupon a suitable and permanent basis may be founded, so that the valued memorial of our greatest general may safely stand to perpetuate his fame?

QUONDAM.

* A proposition for such a road partly in a cutting we published some time ago.—ED.

THE MAINTENANCE OF THE CRYSTAL PALACE.

THE report of the directors, submitted to the shareholders this week, says:—"The balance would appear to justify the directors in recommending a dividend of 2 per cent. on the ordinary stock, but on looking to the large expenditure which is rendered necessary by the wear and tear of the building, and which, of course, will have to be continued from time to time, as occasion may require, they do not recommend a division of more than 1½ per cent., leaving a balance of 6,955*l.* 7*s.* 7*d.* to be carried forward. . . . Out of these the most considerable item of excess over the expenditure of last year is for the repair of the main building, principally in the renewal of the roofs, which could no longer be postponed. Another item, of 1,502*l.*, is on account of the repair and re-painting of the water towers. The execution of this work was submitted to competition, and the contract let to a highly respectable firm, by whom the work is being carried out in a thoroughly substantial manner, under the superintendence and to the satisfaction of the company's engineer; so that the towers will shortly be in a perfectly sound and satisfactory condition. The restoration of the roofs of the main building, now in progress, must be continued during next year, and a considerable outlay will have to be incurred under this head, independently of the current repairs to other portions of the fabric, until the whole area of the roof has been renewed. The method adopted is, as has been already explained, much more substantial than that of the original construction; and when the repair has been effected it is not probable that any material outlay on this part of the fabric will be required for many years to come." An arrangement is said to be pending for letting a portion of the company's land at the north-west corner of the building, abutting on the main road, at an advantageous ground-rent, for the formation of a residential proprietary club in connexion with the principal London clubs.

THE VENTILATION OF ROOMS.

THE necessity of ventilating the rooms o private houses, to get rid of the foul air produced by gas-burning is so universally felt, and the failures in the usual systems are so numerous, that I feel sure you will be pleased to hear that a mode adopted in my new house has proved quite effectual, as well as perfectly simple and inexpensive.

In building the chimney-breasts, in each room a half-brick was left out at one side, next the wall, for the whole height; and on a level with the floor an opening was left from the channel through to the chimney. A length of ordinary rainwater-piping was then fitted throughout the channel, with its top open near the ceiling, and its lower end open (through a hole cut in side of stove) above the hearthstone, and under the fire. The plaster of course covered all but the

top opening, where a small grating was fixed. The total cost was about 7s. per room.

The action of the ventilator is simply that the draught up the chimney draws the air down the pipe, and consequently carries off the impure air floating about the upper part of room. It does not act while the door of the room is open, but when the door is shut (the time when ventilation is needed), the draught is so great, that a light applied to the lower end is at once extinguished. George H. Chubb.

ARCHITECTURAL UNION COMPANY.

At the annual meeting of this company, held at the House, in Conduit-street, on the 6th inst. Mr. Charles Mayhew presided, and a report was read from the directors, showing such a good state of the finances, that a dividend of 5½ per cent. was recommended.

The meeting carried out the recommendation, and voted the directors and auditors, for the first time, a nominal sum, thirty guineas, for attendances. Sir W. Tite, M.P., Mr. Edmeston, and Mr. S. Wood, retiring directors, were re-elected.

PORTLAND CEMENT AND LEAD.

If, as is stated in the *Builder* of December 2, Portland cement destroys the lead with which it is brought into contact, it is highly improper to use it for pointing lead flushings where turned into the joints of brickwork. Can any of your readers inform me as to the effects of this cement on zinc? H.

LESSONS FROM SCARBOROUGH.

Flushing old sewers will not effectually cleanse them, but will materially assist the dissemination of sewer poisons. The *Builder* has been right in strenuously advocating the appointment of respectable, well-paid sanitary inspectors, independent of local control or favour; for the houses of the upper classes require sanitary inspection as much as those of the poorer classes.

Any drains other than self-cleansing should be destroyed, or they will destroy. House-drains made on thoroughly efficient principles will save the expense of a specially-retained turncock for the purpose of flushing. Pro.

SCHOOL BOARDS.

The Barnsley Board.—At an adjourned meeting of this Board, resolutions empowering the building sites committee to purchase 2,000 square yards of land in North Eldon-street and Park-road, on which to erect new schools, were passed. On the motion of Mr. Butcher, seconded by Dr. Sadler, the clerk was authorised to issue advertisements requesting architects to send in designs for two schools.

The Reading Board.—As to the Silver-street School, a committee's report advises the erection of school buildings for not less than 200 children, consisting of two departments, namely, mixed and infants. The site which appeared most eligible was that on the east side of the street belonging to Mr. Blagrave, a portion of which is of 85 ft. depth, and some of 175 ft., the former being 3*l.*, and the latter 5*l.*, per foot frontage. If the latter be chosen, a frontage of 40 ft. will suffice; but if the former, a greater frontage would be necessary. The committee recommend the appointment of an architect to advise in the matter, to prepare plans and estimate of probable cost; and it invited the Board to consider whether the money required for the purpose should be raised by loan under the powers of the Act.

SEWERAGE OF SLOUGH.

Some three or four years ago the main sewers for this town were laid down. Since then the Thames Conservancy Act was passed. Several ineffectual attempts have since been made to acquire land for utilising the sewage by means of irrigation, but without effect. This year plans have been deposited and notices given to acquire under the Lands Clauses Consolidation Act about forty-five acres of land, the property of Lord Harewood. Mr. Curley, of Hereford, is the engineer. The Windsor people are going in for the A B C process! Will this satisfy the Conservators of the Thames?

THE COMPLETION OF ST. PAUL'S CATHEDRAL.

Sir,—As in several letters published in the *Builder* attention has been called to the works now going on in St. Paul's, as though the permanent decorations were being carried out in mean materials, it appears worth while for me to make a few observations on them,—not for the sake of deprecating fair and wholesome criticism—for such correspondents as "A. P.," for instance, December 2nd, may feel assured that their letters are appreciated, whether or no they are answered publicly,—but because there have been some unnecessary ink and paper used from want of reflection on the peculiar conditions under which the work has here to be carried on. As the church is open to everybody during the progress of the works, all those experiments which are generally seen only by persons engaged have to be exhibited to the public eye. Accidental observers, therefore, should be on their guard against forming erroneous and premature conclusions. The "astonishment" of "A Student," in your last number, and the article to which he alludes, are of this character. If any weight were attached to such comments it would preclude valuable and inexpensive experiments.

F. C. Penrose.

CLIFFORD CASTLE.

Clifford Castle is the most westward of the fortresses by which the line of the Wye is protected in its passage across the county of Hereford, and which appear to have been constructed, some long before, some shortly before, and others shortly after, the Norman Conquest, for the defence of that fertile acquisition against the scarce-subdued Welsh of Brecknock and Radnor.

As early as the first quarter of the ninth century the Saxons, under Egbert, had reduced Wales to a nominal subjection. And that great prince, having conquered Mercia, and exercising power over all England, is not unlikely to have strengthened the Mercian frontier, and the Saxon acquisitions generally, on the Welsh side; and to this period may be due, not improbably, such earthworks as those at Cardiff, Caerleon, Shrewsbury, Old Radnor, and Builth, and, now partially destroyed, at Hereford, and wholly so at Worcester: earthworks which, in their main features, resemble those thrown up early in the tenth century at Tutbury, Tamworth, and Leicester by Edward the elder and his sister Ethelfled.

But whatever may then have been done, it is very certain that during the reign of the Confessor several of his Norman favourites settled in England, and that, among them, Richard Fitz-Scrob had lands in the north of Herefordshire, and there set up and gave name to Richard's Castle. As this castle was a great cause of offence, it probably was something different from the fortified timber houses of the English Thanes, and may well have been of stone, after the rising Norman fashion. It was certainly a place of considerable strength, and was useful during the invasion of Prince Griffith, in 1052. The fashion, probably, did not extend among the English, for when the same prince invaded Archenfield, and burned Hereford city, in 1055, he destroyed, apparently without much difficulty, the strong place, or Gaer, attached to it, and of which no doubt the banks and ditches yet remaining, and the mount, known to have been removed, were parts. Harold retook and fortified the city in 1056. No doubt the earthworks may have been executed by him, but more probably he found and made use of them.

Herefordshire was at that time, and long afterwards, one of the most valuable and most threatened of the English acquisitions on the Welsh border. Before the Norman Conquest it was under the vigorous sway of Earl Harold, who beat back the Welsh from Rhuddlan to Gloucester and Chepstow, although he was unable to prevent Caradoc ap Griffith from destroying the hunting-seat in course of construction for the Confessor at Portskewet. That Harold encouraged fortified places on these marches is pretty certain, seeing that of the small number of castles recorded in the Domesday Survey no less than ten are named as standing in the marches of Monmouth and Hereford: namely, Wigmore, Clifford, and Chepstow, founded by Earl William Fitzosborne, and the former reputed one of the oldest honours in the kingdom; Monmouth; Ewyas, founded before the Conquest, and repaired before Domesday, by Alured de Marleburg; Avretone; Caerleon, famous for its Roman walls and its mount; Ferrars Castle; Herdeslie; Waterleye; and others, known to have existed but not mentioned in the Survey.

These castles were, no doubt, the work of Norman lords, but whether all were wholly so may be doubted. Some certainly, like Caerleon, independently of its Roman walls, stood in the midst of earthworks likely enough to be the work of the earlier English, or even of the more remote Saxon.

Clifford Castle stands on the right bank of the Wye, at the bottom of one of those short sharp bends so frequent along the course of this river, and which add so much to its beauty. It crowns a red sandstone cliff about 150 ft. above the stream, and close to it. The scarp, naturally steep, has been recently made steeper by art, to allow of the passage of the Brecon and Hereford Railway between the castle and the river. The cliff is part of a knoll of high ground, about half a mile long, and cut by the long-continued action of the river into a semilunar figure. The highest part of this knoll is converted into a narrow tongue by a broad and deep ravine, which descends from the north nearly parallel to the Wye, and terminates in the river bank. A long tapering ridge is thus isolated between the ravine and the river, and upon this stands the fortress. The ravine bounds the ridge on the south and east, and a natural depression of no great depth crosses the latter at the broad north end. The intermediate part is traversed by two artificial cross ditches, which run from the river to the ravine, about 100 ft. deep, but still considerably above the level of either.

The central and highest part thus isolated contains the inner ward. South of this a very small but strong division constitutes the outwork, and on the north is the lower but broader expanse of the outer ward, the three being thus in a line.

The *inner ward*, of which alone any buildings remain, is roughly quadrangular, about 100 ft. square. Along the west or river front, are the hall and withdrawing-room. On the south front is a half-round tower and a curtain. The east, or ravine side, is destroyed to the ground level, as is nearly all the north end, in which was the gate-house. The *hall*, 20 ft. by 40 ft., was on the first floor. There was a store or cellar under it, of which the east and south walls are gone. Its entrance, and any light it may have had, were probably given on the court or east side. The hall had a timber floor. It was lighted by three windows in the west or river wall. Of these the recess of one remains, with a rather low pointed arch. A door in the north wall led into the withdrawing-room, and one at the south end into the mural tower. The east and south walls are gone. The *withdrawing-room* occupied the curved angle of the ward between the hall and the gate-house; beneath it was a ground-floor. The south end of the hall, like the west side, was an outer curtain. It abutted against a *half-round tower*, 30 ft. diameter, with walls 9 ft. thick, and a gorge wall, 5 ft. thick, flush with the inner face of the curtain. This tower seems to have had an under ground-floor, now filled up. The basement has a door from the court, in the gorge; another door on the west side, probably a postern, and two loops with wide recesses, opening towards the field. The upper floor also had two loops to the field, a window in the gorge, and on each side a door, one leading obliquely into the hall, and the other into a mural chamber within the curtain, and containing a garde-robe, double. The floors were of timber. There is no staircase nor fireplace.

The *curtain* breaks off towards the south-east angle, where it seems to have expanded and probably abutted against a tower. In it is a mural chamber, a garde-robe, single, on the first floor level, and which evidently opened from the destroyed tower. The two garde-robes mentioned open by oblique shoots in the wall, about 5 ft. from the ground, without any projection. As the whole east or ravine front is gone, it is difficult to say whether there were towers at the south-east and north-east angles; probably there were, and round ones. In the north front are two circular depressions, evidently the place of the two towers of the *gate-house*, and between them is the entrance. This leads from the outer ward, and crossed the ditch upon a causeway of earth, about 6 ft. broad at the top, and the ascent up which from the counterscarp of the ditch to the portal is very steep. The causeway appears to be original, and has been pitched with stones on edge. At the end of this ditch, where it opened on the river bank, it is crossed by a curtain, 6 ft. thick, intended to prevent enemies

from crawling up the river bank and surprising the adjacent gateway. This curtain is now about 6 ft. high, and probably was 25 ft. or 30 ft.

The *outwork*, south of the inner ward, and divided from it by a very narrow but deep ditch, is not easily to be explained. It is the extremity of the ridge, of a triangular figure, 60 ft. on a side, and level, showing no trace of earthwork or masonry of any kind. The three scarps are very steep indeed, and quite sharp and fresh cut, the soft rock being covered with excellent firm turf. This outwork is so dangerously near to the inner ward, and at so high a level, that it must have been occupied, probably by a stockade or timber structure. It is a very curious work.

The *outer ward*, at the north end or root of the ridge, is 60 ft. or 70 ft. lower, and much broader than the inner ward. Its defence on the south is the cross ditch, over which passes the causeway to the inner ward; on the west is the river-cliff, 80 ft. to 90 ft. high; and on the east and north a steep scarp, partly of red rock, partly revetted in masonry, and from 10 ft. to 20 ft. deep. Beyond it is the upper part of the ravine, and the natural depression connecting the ravine with the river bank. This ward is something between a square and a circle, and about 300 ft. in diameter. It has evidently been defended by a curtain, probably a low one, on the east and south, or exposed sides, and the ground, usually level, rises in a sort of ramp to what appears to be the remains of the wall. This ramp is wanting on the river and south faces, which, being covered by the river and the river ward, were probably palisaded only. About the centre of the east front is a low mound, apparently the foundations of a round mural tower.

The depressed ground in the centre of the south front indicates that the outer entrance was there; and midway between this and the causeway, leading to the inner ward, are two long heaps of earth and stone, with a passage between them. They much resemble the remains of a long gatehouse, between the outer and inner gate; but if so, this must have been in the middle of a wall dividing the outer ward into two, of which no trace remains.

This outer ward, never very strong, was evidently intended for the reception of villagers and cattle during the inroads of the Welsh. The earthworks, though deeper and broader than the Normans usually gave to so small a fortress, have nothing of the character of British or Saxon work, and are probably not older than the Conquest, or the reign preceding it. But of the existing masonry none can be safely called Norman. The walls are of inferior and rudely-coursed rubble; no ashlar remains, save a bold cordon or bead, which runs along the top of the lower or battering part of the wall, and this is not carried all round. The arches of the mural tower are flat pointed. On the whole, the general appearance of the buildings point to the reign of Henry III., and none of it seems of older date. Certainly no decidedly Norman work is seen.

The ditches were substantially dry, though they may have received and retained more or less land-water. At the base of the slope of the outwork the ravine has been deepened for a rectangular pond, probably a fish-stew, and an early drawing shows water here collected.

Probably the original castle, ditches included, was the work of William Fitz-Osborn, Earl of Hereford, who died 1070-1; but the present structure may well have been the work of the third Walter de Clifford, a very considerable person, who married a daughter of Llewelyn, Prince of Wales, and was in possession of Clifford from 7 Hen. III. to 47 Hen. III.

Looking from the inner ward upon the river, there is plainly seen, just above the castle, the line of the old mill-leat, now a green ditch, and the small eyot upon which must have stood the castle mill. A ripple on the river, here somewhat expanded, shows a ford; and opposite, on the edge of a broad expanse of low, level mead, is the village of Cabalva, said in Welsh to mean a horse-ford. Thus is seen at one view the cliff and the ford which, under the Saxon sway, gave its appellation to the parish, and from which one of the most celebrated of the great English families derived its name.

Clifford, though the cradle of a great race, could have been valuable only while Herefordshire was an unsafe possession. With the settlement of the country under Edward I., it probably fell into disuse and decay. It is far too small and too inconvenient of access, to be held, except for safety; and such history as it has is confined to a very early and warlike period.

It is reputed, with Striguil or Chepstow, Ewyas, and Wigmore, to have been founded by William Fitz-Osborn, one of the companions of the Conqueror, and the first Norman Earl of Herefordshire. He was killed in 1070, and his third son, Roger de Bretuil, who succeeded to his English lands, had forfeited them before the Domesday Survey, when the castle was held by Ralph de Toni, who, by Dugdale, is said to have married Alicia, one of Roger's daughters. However this may have been, he possessed Clifford Castle at the time of the survey, and died 1102.

How the castle passed from De Toni is unknown, but here Simon, son of Richard Fitz-Pons, was seated, and founded a priory, and he and his brother Richard are said by Dugdale, to have adopted the sirname of Clifford. Walter de Clifford, son of Richard, was a great Marcher Baron, and living in 1165. His son, Walter the second, was a still more powerful man. He died 1222, having married Margaret, daughter of Llewelyn, Prince of Wales, and was father of a third Walter, and of Roger, ancestor of the great house of Clifford, Earls of Cumberland.

Walter, who died 1263, closed the elder line. Maud, his heiress, is said to have married, first William de Longspée, Earl of Salisbury, and, second, John Giffard, of Brimmesfield, who held, probably during her life, Brunless Castle, the manor of Glasbury, and the manor and castle of Clifford, being seized of them at his death, 27 Ed. I. Maud's daughter by Longspeé, married Henry de Lacy, Earl of Lincoln, and probably, upon her mother's death, she obtained her heritage, for in the inquisition held upon De Lacy and his wife, 4 Ed. II., the manor and castle of Clifford are included. The castle probably had now ceased to be of importance, for it does not again occur in the inquisition. It is not usually regarded as having been the "caput" of an Honour, but Giffard's inquisition mentions its tenants by knights' service, and John de Solers, 4 Ed. II., holds Paunteleye manor of the "Honour of Clifford," in the county of Gloucester, which in those days was not always distinguished from other parts of the march.

The Church of Clifford throws no light upon the architecture or owners of the castle. The tower, of considerable size and solid aspect, may be moderately old, but the rest of the building has been rebuilt in the churchwarden manner prevalent in 1836, the roofs, however, having been preserved. Also, from the old building, are preserved a good coffin-lid cross in a circle, placed most unwisely as a cill to the north door; a font, or rather the octagonal bowl of one, probably of Decorated date; and in the chancel, loose on a shelf, a very fine life-sized effigy of an ecclesiastic, robed and tonsured, boldly designed and excellently executed in wood, and which deserves better care. G. T. C.

BAYHAM ABBEY, SUSSEX.

THE new mansion, shown by the accompanying illustrations, is erected on the estate of the Marquis Camden, near Tunbridge Wells, on the north side of the valley, at the bottom of which runs the stream called the Tun, having on its southern margin the remarkably interesting ruins of the abbey said to have been built by the Præmonstratensian canons, in the reign of Richard I.

The small modern house by the side of the ruins has no architectural merits, and will probably be taken down at no distant period.

The foundations for the new building were commenced in 1869, and the first stone of the plinth was laid by the Marchioness Camden, on the 13th day of January, 1870.

The materials used in its construction are as follow:—The walls are built of bricks made upon the estate, faced with Kentish ragstone from the Maidstone quarries, as a general facing, with Combe Down Bath stone quoins, window and door dressings, cornices, &c., and the roofs are covered with green slates from the quarries in North Wales. The ceilings of the principal suite of rooms are subdivided into panels, with moulded ribs, pendants, and enrichments, and the mantelpieces, designed in corresponding style, are composed of coloured marble, Derbyshire spars, and alabaster, executed by Mr. Earp, of Kennington-road.

The character of the architecture and general arrangement of the plan resemble the examples of manorial houses existing in this country, of the latter part of the sixteenth century and the beginning of the seventeenth century, but adapted to the convenience of modern requirements.

The principal approach is on the north side, by a new road from near the station at Frant, recently constructed, leading to a *porte cochère*, entrance-hall, and corridors, from which the reception-rooms, billiard-room, and library diverge on either side.

The dimensions of these rooms stand thus:—The entrance-hall, 24 ft. by 24 ft.; saloon, 51 ft. 6 in. by 24 ft.; dining-room, 34 ft. by 22 ft.; library, 33 ft. by 22 ft. 6 in.; drawing-room, 33 ft. by 22 ft.; billiard-room, 26 ft. 6 in. by 22 ft.; Lord Camden's room, 26 ft. by 18 ft.; Lady Camden's room, 26 ft. by 18 ft. The principal staircase is 23 ft. by 23 ft., and 34 ft. high, each flight of steps being 6 ft. wide, and inclosed with oak pierced work in panels.

The arrangement and dimensions of the offices may be sufficiently gathered from an examination of the plan.

The height of the ground-floor story of the main building is 16 ft. 6 in.; and that of the first and second floors is 11 ft. 6 in. and 10 ft. respectively. The offices being about 12 ft. high, except the kitchen, which is 21 ft. 6 in. high.

On the first floor there are eight bedrooms, and six dressing-rooms, day and night nurseries, bath-room, work-room, &c.; and on the second floor are eight bedrooms, and two dressing-rooms, and nine female servants' rooms, linen and store closets.

In the basement story are a muniment-room; wine, beer, and coal cellars; a room for the heating apparatus, supplied by Messrs. Haden & Son, of Trowbridge; clothes-cleaning room; and other offices.

Leading off the back staircase on each landing is a housemaid's room, supplied with hot and cold water; and an opening into a lift, constructed to raise 1¼ cwt., which communicates from the basement to the second floor, supplied by Messrs. Bunnett & Co.

The men-servants' bedrooms are arranged over a part of the kitchen offices, on the west side of the courtyard.

On the south and west sides, following the fall of the hill, are a succession of terraces and slopes, which add much to the picturesque effect of the building, especially as seen from a distance; and command fine views of the nave, choir, and other remains of the old abbey, the church, the well-wooded park, the stream, and surrounding scenery.

The parapets on the terraces are executed in stone, and terra-cotta supplied by Mr. Blanchard.

In the rear of the offices, on the north, are being erected the stabling, coach-houses, gamekeeper's room, gasworks, and so on.

The stream before alluded to, which here separates the counties of Kent and Sussex, supplies, by means of a water-wheel, a large reservoir, constructed upon the rising ground, above the levels of the roofs of the house, from which pipes communicate through filtering-beds, with the several cisterns, and with hydrants for protection against fire. These works have been executed by Messrs. Easton, Anderson, & Co.

The contracts for the mansion and stables were taken by Messrs. Trollope & Sons, of Parliament-street, by whom they have been nearly completed, Mr. French being the clerk of the works.

According to Shoberl's "Beauties of England and Wales," in the reign of Henry VIII. Cardinal Wolsey obtained a grant of Bayham as one of the smaller monasteries. On the disgrace of the cardinal, the manor, with the site of the abbey, reverted to the king, and seems to have remained in the possession of the Crown until Queen Elizabeth granted the estate to Anthony Brown, Viscount Montague. About 1714 it was purchased by Mr. John Pratt, afterwards Lord Chief Justice of the King's Bench, and from him descended to the Marquis Camden, who derives from it the title of Viscount Bayham.

The late second Marquis Camden had in contemplation the erection of a mansion upon a site not far removed from the one now selected, but nothing was done at that time beyond the preparation of drawings.

The present buildings have been executed from the designs of Mr. David Brandon, and carried out under his superintendence.

In addition to the foregoing works, a church has been built in the park between the mansion and the Abbey ruins, to accommodate 140 persons, by Messrs. Willicombe & Oakley, of Tunbridge Wells, a description of which has already appeared in the *Builder*.

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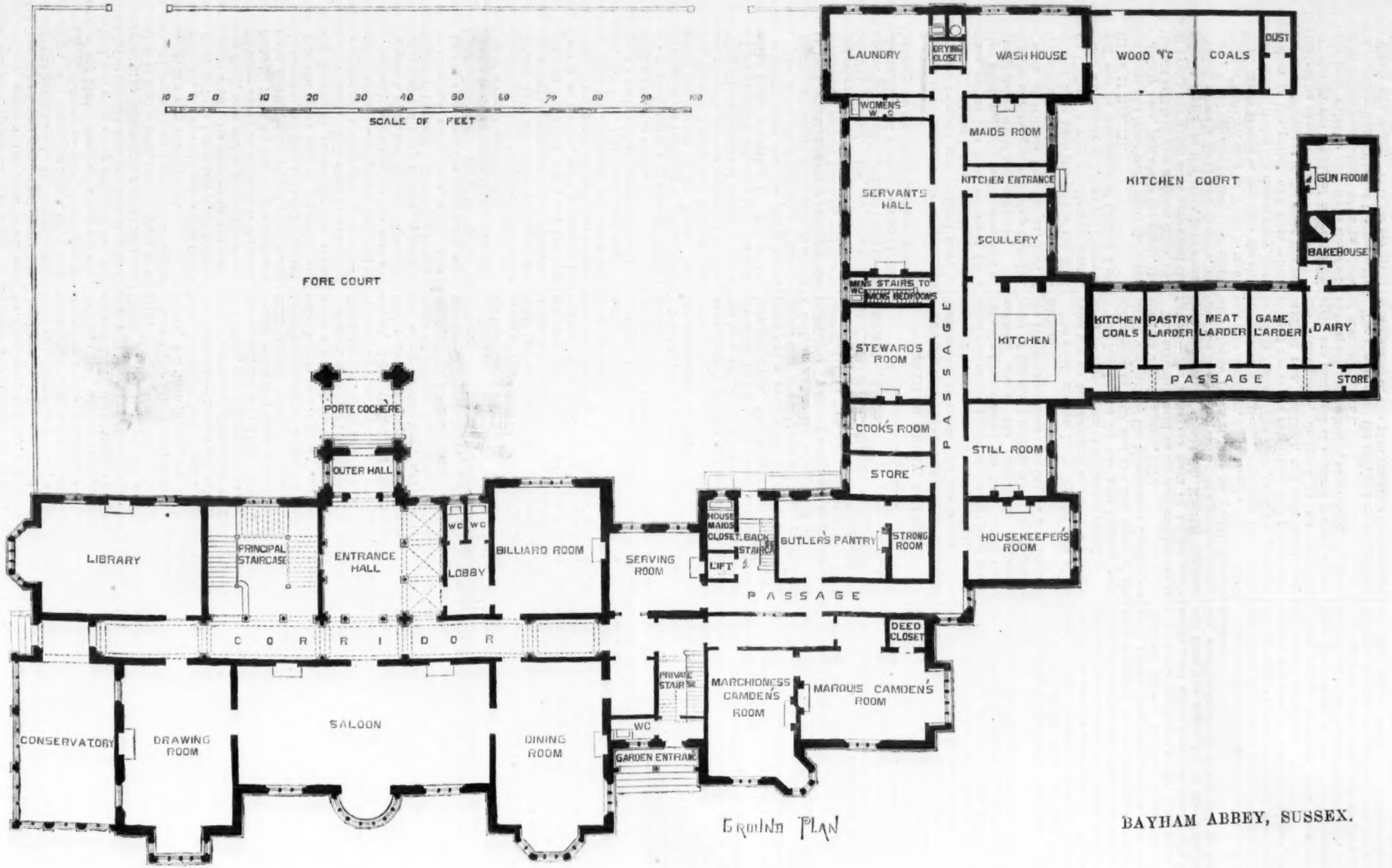
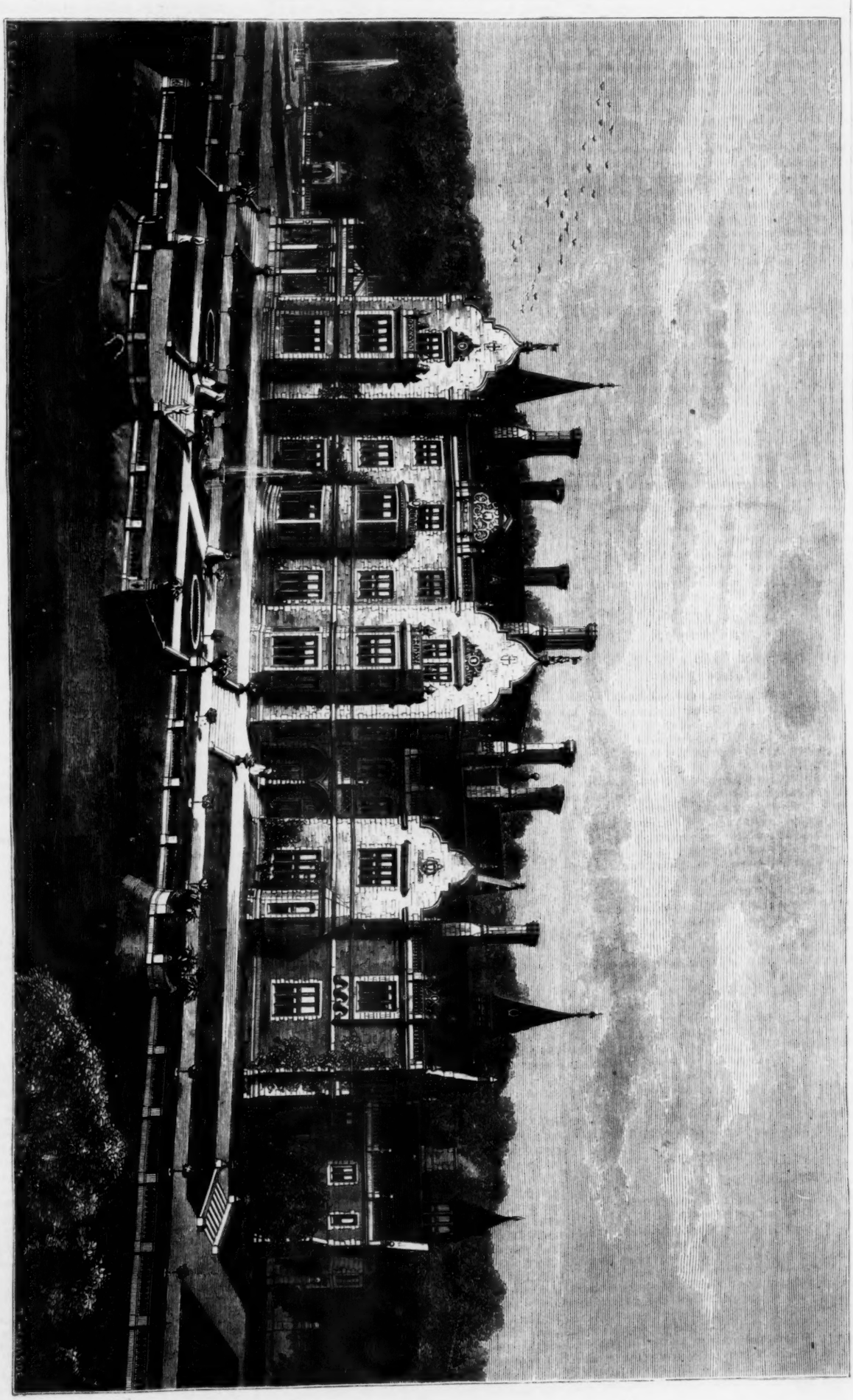


GROUND PLAN

BAYHAM ABBEY, SUSSEX.



BAYHAM ABBEY, NEAR TUNBRIDGE WELLS, SUSSEX.—MR. DAVID BRANDON, ARCHITECT.

THE INSTITUTION OF CIVIL ENGINEERS.

AT the ordinary meeting of this Society, on Tuesday, the 12th inst., Mr. C. B. Vignoles, F.R.S., President, in the chair, after the transaction of the purely formal business, it was resolved unanimously, that, "considering the critical condition of his Royal Highness the Prince of Wales, and the deep anxiety which the nation is now suffering, this Institution do show its sympathy in the general feeling by immediately adjourning." The annual general meeting "to receive and deliberate upon the report of the council on the state of the Institution, and to elect the officers for the ensuing year," is announced for, and must, according to the statutes, take place on the 19th inst., being the Tuesday next previous to Christmas Eve.

THE DRAWINGS FOR THE NEW COURTS OF JUSTICE.

THE President of the Royal Institute of British Architects presents his compliments to the editor of the *Builder*, and begs to state that he has received a note from Mr. G. E. Street, R.A., informing him that if any members of the Royal Institute of British Architects would wish to see the drawings for the proposed New Law Courts, Mr. Street will be happy to make arrangements for their doing so on Saturday, December 23rd, at three o'clock in the afternoon, at the architect's office on the site, the entrance to which is by a small door in the hoarding in Carey-street. Any architect presenting his card at that entrance will be permitted to see the drawings.

SOANE'S MONUMENT.

SIR,—My attention has been called to a letter which appeared in your impression of Dec. 2nd, signed "A Soane Student," in which the writer complains in very strong language of what he describes as the *present* state of Sir John Soane's mausoleum.

He states "with the authority of a personal knowledge" that it is "excluded and forgotten, with balustrades broken, marble capitals chipped, inscription wilfully defaced, and entrance filled up with brick-rubbish, the dome mutilated, and the coping broken, &c."

This statement occasions me much surprise, because the mausoleum in question was placed in a state of complete repair, a few months ago, by the family of the late Sir John Soane, and I myself saw and examined it so lately as last month, when I found everything in a satisfactory state.

A board has, moreover, been placed near the mausoleum, offering a reward to any one who may give such information as shall lead to the conviction of any persons found injuring it, by throwing stones or otherwise.

On one point I fully agree with the "Soane Student:" the state of St. Giles's Cemetery is a disgrace to a Christian country; and I do not remember to have felt more indignant than on looking round on the wanton destruction of many valuable monuments which is there permitted by the parochial authorities.

A LOVER OF TRUTH.

BUILDING PRICES.

SIR,—We feel sure you will allow us, with your usual courtesy, to say a word with reference to the correspondence, under the above head, in your columns, and in defence of our book, Dobson & Tarn's "Students' Guide to the Practice of Measuring and Valuing."

Your correspondent "A. B. C." will, on referring to p. 142 of that work, find examples of the application of constants of labour which answer exactly the question he puts, and which sufficiently prove that, notwithstanding the assertion of "Q. R.," it is unquestionably "elementary in its character." As to its "not being sufficiently comprehensive to become a standard authority," we could quote half a dozen opinions from as many professional journals, to the effect that it has long been recognised as *the* standard authority on the subject; and this irrespective of the elaborate and favourable notice of the new edition of the book which appeared in your own columns of the 8th of April ult.

It appears to us singular that your correspondent, who writes under the mysterious and evidently not genuine initials, "Q. R.," should not be satisfied with praising Mr. Hurst's book, but should at the same time take occasion to speak disparagingly of a well-known work which you had thought fit to recommend, and which is in reality the quarry from which much of the material for several works of a similar character has been hewn.

LOCKWOOD & CO.

THE PROPOSED REMOVAL OF ST. CLEMENT DANES CHURCH.

THE local authorites of St. Dunstan's-in-the-West state that the removal of the church of St. Clement Danes, and its re-building, in order to make way for the New Law Courts, has been decided upon by the Government; and that the cost will amount to 50,000*l.*, which the Government propose shall be borne, amongst others, by the parish of St. Dunstan. This proposal is considered by the St. Dunstan authorities to be unfair, and a public meeting is about to be held on the subject, with the view of protesting against the proposed arrangement, and communicating with the Government.

MIDDENSTEADS.

MR. F. C. FAIRBANK, the medical officer of health for Doncaster, shows that in that borough there are exactly 3,015 ash-pits or middensteads, some of very large size! and that from the way in which nearly all these places are constructed they become centres for the production of morbific gases, which poison the air around, and it is feared are often a fruitful source of disease. In some of the large towns where the collecting of refuse is undertaken by the authorities, the annual expense amounts to a large sum; for example:—In Liverpool, 13,666*l.*; in Manchester, 12,500*l.*; in Bradford, 3,822*l.*; and in Bolton, 1,600*l.* Mr. Fairbank finds that the average cost of collecting per load is 2s. 5¼d., and the average annual expense per head of population 7¼d. He properly urges on the committee the extreme need for some steps being taken at once; and adds, "We have at the present time a dangerous epidemic amongst us which has carried off in little more than eight weeks thirty-seven persons."

ARRANGEMENT OF CLOSETS.

SIR,—The illness of the Prince of Wales has given rise to much discussion on the subject of drainage. I believe that the rich poison themselves by having too many water-closets; they are more and more numerous in houses every year.

When space can be given there should be no closet without a vestibule or outer chamber. This vestibule should have a window for light and ventilation opposite the door leading from the interior of the house, so that the foul air, whenever it exists in the closet, may not be drawn directly into the house, as it must be without such intermediate air-trap, as I may call it. The room would be useful for washing hands and many purposes.

V. C. C.

PRECAUTIONS AGAINST FIRE AT ALNWICK CASTLE AND ALNWICK.

SIR,—The nation will doubtless be glad to learn through your columns, since the fire at Warwick Castle, that at least one of our great historic buildings is provided with ample means of precaution against fire. I allude to the ancestral seat of the Percys, Alnwick Castle. At the conclusion of the costly constructive and decorative works undertaken by the late Duke Algernon, a supply of water was brought from his grace's reservoir in the parks, about two miles distant, as a special provision in the event of an outbreak of fire at the Castle. On one occasion, a trial having been made by the surveyor of the Local Board of Health as to the efficacy of this supply, and it being found inadequate, the present Duke of Northumberland caused the pipes to be taken up, and a new 8-in. main pipe laid direct from the reservoir to the Castle, and six hydrants or fire-plugs are attached thereto to command, at full pressure, the highest and every point of the fabric. This supply is moreover supplemented by a mutual arrangement between his grace and the Local Board of Health, whereby the town's water-supply can be added to that of the Castle in an emergency. A trial made by the surveyor in practice with his fire brigade, only three or four weeks ago, at the Castle, proved that the supply there answered every expectation of efficiency.

The advantage of a full and constant pressure of water direct from the reservoir in case of fire, without the aid of engines, was proved on a recent occasion in this town. A fire broke out between two and three o'clock in the morning in the attic of a merchant tailor's premises, caused by the tailor's stove being placed too near woodwork. No one lived in the premises, and the fire was discovered through the restlessness of a sick child keeping the parents of the tenant of the adjoining property awake. Some time necessarily elapsed before the surveyor and his fire brigade were aroused, collected together, and the hose attached to the nearest hydrant, and the fire had got pretty full possession of the roof. The force of the town supply, however, was so great that in a few minutes the fire was put out.

MEMBER OF THE LOCAL BOARD OF HEALTH.

THE CHAPEL OF ST. LUKE STUBWOOD, DENSTONE.

A SMALL chapel has been built in a hamlet of the village of Denstone, for mission purposes from the designs of Messrs. Slater & Carpenter It consists of a nave and sanctuary, and, with the exception of the plinth, which is of brick and stone, is entirely of wood framing and plaster, the framing showing inside as well as outside. The windows of the nave have simple cusped heads; those of the sanctuary have traceried heads. There is no east window, but the wood framing is here treated more ornamentally. At the west end is a small vestry and porch, with bell-cot over. The floor is of wood, and the sanctuary has oak steps and floor

Messrs. Clayton & Bell, besides executing the grisaille glass for the windows, are at work on a tryptich, representing the Crucifixion, to be placed over the altar. The works have been executed by Mr. Stubbs, of Denstone, as well as the inlaid altar of oak.

EXTENSION OF THE QUEEN'S HOSPITAL, BIRMINGHAM.

THE foundation-stone of the workmen's wing of the Queen's Hospital at Birmingham has been laid, with Masonic honours, by Lord Leigh. Connected with the old building by a glazed corridor, which will serve as a conservatory for convalescents, will be the out-patient department, with central hall; public and private consulting-rooms, a special department for the diseases of women, reception-rooms for students, and provision for the classification of sexes; a dispensary; rooms for resident surgeon and assistants, lady superintendents and nurses, and a porter's-lodge and dressing-rooms. It is also proposed to have a bath-house, with sanitary and scientific arrangement for baths for in- and out-patients, specially with a view to preventing the public baths of the town being used for contagious diseases. Another glazed corridor will lead to two detached blocks of wards, each ward containing 24 beds, with convalescent-room, nurses' room, &c. On the north boundary, besides a building especially for scientific and sanitary purposes, it is intended to erect a laundry, with all necessary appliances for the thorough disinfection of the clothes-room, and the bedrooms used by persons suffering from contagious diseases. The result of these arrangements when complete will be that the building, now standing on the north boundary of the old Queen's Hospital ground, will be utilised exclusively for contagious diseases. This will involve an outlay of about 20,000*l.*

PLAN OF THE LAW COURTS.

SIR,—The discussion that has been raised upon Mr. Street's last elevation for the Law Courts building affords an opportunity, which will probably be as gratifying to that gentleman himself as to others, of reconsidering the plan.

In the instructions originally issued by the commissioners to the architects selected for the competition, the area within which the whole of the buildings were to be included was precisely defined, and among the various requirements directed or implied in them was that of a great hall, which was to be a central feature in the design. These two conditions, one of which was absolute, and the other so strongly recom-

mended as to be almost imperative, apparently so controlled the ideas of all the architects as to produce a sort of general similarity in their plans, and were so erroneous in themselves that they have doubtless been the chief origin of the dissatisfaction that has since arisen with respect to both plans and elevations.

The mistakes that appear to me to be contained in these two leading conditions are, 1st. That the site was too small and of bad form for the building directed to be included in it; and, 2nd. That it was impossible that one central hall could be either a useful apartment or a suitable feature to so vast a mass of building; and the result of the efforts of the architects who have attempted to fulfil these conditions gives some confirmation to this notion. They had all more or less the same collection of small dark and necessarily ill-ventilated courtyards, symmetrically disposed in a series of concentric squares round the great hall in the middle; and as if on purpose to prevent the possible ingress of light and air within the sacred enclosure, there was generally a range of lofty and imposing offices on the south or only side on which the sun could penetrate. The bewildered suitor would wander through the endless maze of passages, as sunless nearly as the catacombs, and filled with a legal atmosphere of its own, until he would begin to suppose that the design was intended to be emblematic of the uncertainty and obscurity attending the business to be conducted in it.

The concentration of such a mass of building, in which so many people of all degrees of life were to be daily assembled, and in which no small part of them were to pass the greatest portion of their daily lives, on so small an area and in such a method, would be condemned by our sanitary engineers, and would not be permitted by a Board of Health in any ordinary public building; and this I believe to be mainly the result of those two conditions imposed on the architects.

The problem of designing a building can be put to an architect in two ways. He may either be called upon to occupy a certain piece of ground with the most efficient building he can produce; or a given amount of accommodation can be exacted on a practically unlimited area. The instructions to the competing architects endeavoured to combine the two, and hence, I believe, the failure.

If the exact extent of accommodation which is now considered necessary, and a probable idea of the wants of the future, were given to Mr. Street, and he were left untrammelled with respect to precise area (area and not site, be it recollected), or with respect to any other conditions, he would no doubt very soon produce a building which would satisfy both himself and the legal profession; and by the delay of a year, we should escape being saddled for ever with a building which appears to satisfy nobody concerned in it, either inside or out.

T. B. Collinson,
Colonel, Royal Engineers.

THE SEWAGE QUESTION.

A paper on "Sewage as a Fertiliser of Land, and Land as a Purifier of Sewage," was read by Mr. Bailey Denton, C.E., at the Society of Arts, December 6th. The object of the paper was to show that the fertilising value of sewage would not be fully obtained unless a high standard of purity was established and enforced, with a view to free our rivers from pollution, thus securing the two all-important objects—purification and reproduction, without loss of valuable time. Comparing the standard suggested by the Rivers Pollution Commissioners with that recommended by the chemists consulted by the Thames Conservators, it was pointed out that the latter, being much less stringent than the former (which is quite low enough), might lead to consequences which will be hereafter regretted. If sufficient land for wide irrigation is not to be obtained, or if obtained, only at a price which shall place the application of the sewage by irrigation beyond the possibility of profit, we must call to our aid the oxidising powers of an aërated soil, and regard the land more in the character of a filter, having a chemical as well as a mechanical influence, and thus realise all the advantages that can be gained from it. Land, Mr. Denton stated, might be too porous as well as too stiff, and that both extremes should be avoided. For irrigation, he considered that the sewage from sixty-two persons, with a daily water-supply of twenty gallons a head, which is equal to 2,000 tons per annum, should not be exceeded as the average quantity to be applied to each acre of land, if the sewage is to be profitably used, as well as purified; while it has been proved by some works he has carried out at Merthyr Tydfil, that the sewage of 3,000 persons, which is nearly fifty times as much, may be purified by intermittent filtration through the same quantity of land, and prolific crops grown from the surface at the same time. Mr. Denton stated that the anticipations of the Rivers Pollution Commissioners, — who, when they suggested intermittent downward filtration as a means of purification, said that the process would be attended with formidable objections, inasmuch as it would be entirely unremunerative, and that the manurial ingredients would be absolutely wasted, while the collection of the solid fæcal matters upon the surface of soil, with no vegetation to make use of them, would probably give rise to a nuisance,—may entirely be avoided by the growth of vegetation. Mr. Denton, having stated that the authorities of Birmingham had decided on adopting the same description of works, shortly described those of Merthyr, where twenty acres of land, divided into four equal parts, have been so deeply drained and deeply cultivated, that the sewage of that place, which amounted in dry weather to 870,000 gallons per diem, was being purified to an extent which rendered it superior to the Thames water above the intake of the water companies. Two cubic yards of soil for every square yard of surface are made serviceable as filtering material; and he mentioned that, during the present summer, at times, when the sewage was increased by rainfall to 1,000 gallons a minute, the whole was filtered through half the quantity of land laid out, viz.—ten acres, being equal to 144,000 gallons per acre, or a deposit of 6½ in. over the whole surface.

DANGEROUS FOOTPATHS.

Sir,—The wintry weather now about us suggests difficulties and danger to pedestrians. People will *scrape* away the snow from before their houses, and leave matters worse than they found them,—sometimes a little salt makes things smoother; but why cannot they *sweep* it away before passing footsteps have hardened it into lumps? Then scatter a little fine ash from the grate over the place; sand will do, of course, but ashes are handiest; and that which is dirt in the festering dust-hole is not "matter out of place," where it tends to keep marrow-bonâ-fide travellers right end up. I wish the *Builder* would see to it.

By-the-bye, if we should be snowed up this winter, and in the event of a conflagration, will the engines and escapes be able to get at us? Will water be obtainable? Have any arrangements been made for the removal of accumulated snow, which will not break down on being practically tested? Interrex.

KINGSTON SCHOOL COMPETITION.

Sir,—In your notice, about September last, of the Kingston School Competition, you reported the result to be:—"Experientia," 1st, Mr. Haslam, of 65, Great Russell-street and Henley-on-Thames; "Two Heads Better than One," 2nd; and Masonic Sign, 3rd. May we solicit the favour of your correcting in your next issue an error that then occurred, our drawings, "Masonic Sign," having been selected as the *second best*, and we are to-day (Dec. 6) in receipt of a letter to that effect (having only lost the first prize by a *vote of one*).

T. R. Parker & J. T. Pilditch.

ARCHITECT AND EMPLOYER IN A COUNTY COURT.

At Elland, before Mr. Serjeant Tindal Atkinson and a jury, the case of Hepworth *v.* Lumb has been tried. Defendant is a manufacturer at Elland, and plaintiff an architect and surveyor at Brighouse. The action was to recover 50*l.*, as balance of an account for the preparation of plans and superintending the erection of Wellington Mill, Elland. Plaintiff's claim was originally 86*l.*; 20*l.* of which had been paid, leaving the balance 66*l.* Sixteen pounds had been abandoned to bring the case within County Court jurisdiction.

For the defence, it was urged that on the 3rd of August, 1868, defendant wrote to plaintiff requesting him to stay his hand in preparation of plans, until he (defendant) had seen the machine-maker. After the date of that letter plaintiff and defendant met, and the latter gave to plaintiff the ground plan, showing in what position the machinery would have to be placed, as also in what position the pillars inside the mill would have to be placed, they having to be placed 20 ft. apart. If that course had been adopted by the architect, it would have been unnecessary for defendant to purchase other land, and to pull down the side of the wall, which cost defendant 170*l.* It was also found after the alterations had been made that the pillars were not set according to the mode in which they ought to have been, if the plan of the machine-maker had been carried out. In consequence of the plan of the machine-maker not being carried out, there was not sufficient room for the machinery, and therefore the mill had to be widened. Thus it was owing to the default and neglect of the architect, that 170*l.* expense was incurred by widening. In opposition to this, the plaintiff alleged that he did not see the machine-maker's plan until after the building had been partly erected; but evidence to the contrary was called on behalf of the defendant. Defendant also alleged that the work had not been carried out according to the contracts and specifications, and urged other objections.

The judge, in summing up, said the great point was if the jury believed that the machine-maker, Asa Lees, had made a plan showing where the pillars were to stand, and that the plaintiff had either by neglect or mistake placed the pillars in a position different to what they were shown upon the tracing which he had admitted having received; and that in consequence the defendant had to pull down the side of the wall, which was admitted to cost 170*l.*; if they believed these things, then there was an answer to the plaintiff's claim without going into the other things. It was a question for them as to whether the plaintiff (who, it was alleged, had been discharged by the defendant about March, 1869, in consequence of neglect and irregularities) had been discharged for his neglect. There was no doubt, from a letter he himself produced, dated the 3rd of August, that the plaintiff was warned to hold his hand, and not proceed further, until the machine-maker had been seen.

The jury, after a few minutes' deliberation, found a verdict for the defendant; and on some questions being asked, the jury expressed their opinion that the plaintiff had Asa Lees's plan given him before the contracts for the buildings were let, and that the 20*l.* paid to the plaintiff were sufficient to cover everything he was entitled to.

SOUTHPORT TOWN-HALL COMPETITION.

Sir,—I see a decision has at length been announced in the matter of the designs sent in for the new Town-hall, Southport.

In the interest of the profession at large, will you endeavour to ascertain how that decision has been arrived at?

Was any professional non-local judge called in?

It is a noteworthy fact that the recipients of both the premiums are local men. A Victim.

FEES FOR HOARDS.

At the St. James's Westminster Vestry, the surveyor (Mr. A. P. Howell), reported that a hoard had been erected at No. 270, Regent-street, by Mr. Drew, of Christopher-street, Hatton Garden, without a licence. "Under ordinary circumstances," he said, "a summons would have been obtained, but in this instance I am afraid it would not have been successful. The matter should be referred to the Works Committee to examine and report, and also to inquire into the legality of the practice of demanding fees or deposits of money before such licences are granted. Since the decision in the Court of Queen's Bench, in the case of the New Post-office, I confess I have no confidence in obtaining a conviction when the defence would be an alleged illegal demand for money. This matter is of considerable importance, as there is no reason to accuse Mr. Drew of attempting to evade the law, as he usually acts quite correctly; but he does not apparently acknowledge the right of the Vestry to expand the requirements of the law by rules of their own, so that the time of the committee will not be wasted by an impartial investigation of the whole matter." The suggestion was understood to be adopted.

DECORATIONS OF ST. MARY-IN-THE CAPITOL.

I beg to tender my best thanks, both on your readers' and on my own behalf, to your correspondent, "H. W. B.," for his timely correction of the errors into which I had fallen when attempting to describe the decorations of St. Mary-in-the-Capitol. I regret that the latter agreeable task had not come to the lot of "H. W. B.", "who has watched the progress of this remarkable work for the last five years," instead of its being essayed by a passing tourist like myself. At a period like this, when the completion of St. Paul's Cathedral is so much talked of, all great schemes of iconography are interesting. At the time of my visit to Cologne (about September 27th last), the decoration to the west narthex, as regards its *general* design, appeared to be finished, although the staging was still up and a man at work. The roof of the choir, and the eastern apse were undoubtedly to a great extent obscured by massive scaffolding. I should have been glad if your correspondent, "H. W. B." could have described the process employed in the colouring; also if he could have explained the subjects of the legends on the walls of the west narthex. Owing to being an indifferent German scholar, I was unable to make these inquiries while on the spot. E. B. F.

PAYMENT OF DIOCESAN ARCHITECTS: CORK.

It was proposed to the Diocesan Synod of Cork, at its last meeting, to appoint an architect at a salary of 250*l.* per annum. Ultimately, however, it was resolved that "The architect should be paid for the present according to the work to be done." The following resolutions were then passed:—

"The diocesan architect shall inspect and report upon the see-house and each glebe-house and church in the diocese at least once in every three years, an inspection and report of the glebe-house and church being always made upon the occurrence of a vacancy in the parish, unless the council shall otherwise direct."

"The diocesan architect shall furnish plans for and superintend the execution of all works ordered by the diocesan council."

"The diocesan architect shall specially inspect and report upon any glebe-house, when called on by the incumbent, at a fee of 1*l.*; and travelling expenses to be defrayed by him."

"The diocesan architect shall specially inspect and report upon any church, when called on by the

incumbent or select vestry, at a fee of 1*l.*; and travelling expenses to be defrayed by them."

"The diocesan architect shall furnish a copy of every such report to the diocesan council, and to the incumbent or select vestry, as the case may be."

In some parts of the county such a report as is spoken of would occupy three days, including two days' travelling.

Probably some revision will be needed here: at any rate, explanation.

THE PLANS FOR THE CAMBERWELL NEW VESTRY HALL.

IN answer to the invitation of the Camberwell Vestry for plans for the intended new vestry-hall in the Peckham-road, twenty-four architects sent in designs. These have been submitted to a committee of the Board, who have selected eight out of the entire number of designs sent in, from which the choice will be finally made. The eight designs selected have been placed in the Vestry Hall during the last week for public inspection. The estimated cost of the new building, which is to be erected on the site of Havil House, is 8,000*l.*

SIR,—A gross piece of jobbery is about to be perpetrated over the Camberwell Vestry Hall Competition, and your assistance is much needed to prevent it if possible. The whole of the designs have not even been hung; eight of them are on the walls; the others are piled against seats and tables. Such a collection of rubbish, with one or two exceptions, has perhaps never been seen before.

The committee meet on Wednesday to settle, if possible, the award. A COMPETITOR.

A HINT AND A CAUTION.

HAVING seen an advertisement in the *Builder* of the 11th of November asking for plans, &c. for a dispensary and hospital combined, for the Governors and Subscribers of Louth, I set to work at the sketch plans, but found I could not do much unless I got more information than that contained in the advertisement; so I resolved to get all the information I could. The following morning I took the 8.40 train from Dublin to Dundalk (about fifty-four miles): arrived there, I had to take a car to Louth, distant about seven miles. After a dangerous journey (the roads being covered with frost and ice) I reached my destination, and immediately made inquiries for Mr. Nesbitt (the secretary mentioned in the advertisement), but no person knew any one living in the town of that name. Thoroughly disgusted, I returned to Dundalk, where I made further inquiries, but with the same bad result. Except that I gained the information that there was a Louth in England, and that I had been sold, and at the expense of 1*l.* 1*s.* 6*d.* for travelling expenses, not to talk of the chaff I got and will get, all because those who advertised did not think that there was a town or county of the name of Louth in Ireland. X. Y. Z.

"PROJECTIONS BEFORE THE LINE OF FRONT."

BRUTTON *v.* The Vestry of St. George, Hanover-square. At the usual meeting of this Vestry, a letter was read from the solicitors (Messrs. Capron & Co.), stating that Vice-Chancellor Malins had granted a perpetual injunction, with costs, against the Vestry, to restrain them from pulling down the conservatory in Queen-street, and that they do not consider this judgment will stand on appeal. A letter was also read from Mr. J. T. Schomberg, Q.C., the Vestry's counsel in the action, stating that, in point of fact, the summons was taken out within the six months; that the reason of its not being taken out earlier was because the Vestry were waiting for a decision of the Metropolitan Board; and that the summons was taken out as soon as that decision was given. Dr. Appleton deplored the manner in which the Vestry rushed into law. The Vestry decided to print the judgment and Mr. Schomberg's opinion for the use of members, and to adjourn the question till the first meeting in January next.

UNSAFE LANDINGS.

THE surveyor of St. George's, Hanover-square (Mr. H. T. Tomkins), reported on Tuesday to the committee of works that several persons in the parish, whose attention he had called to the unsafe state of their landings, had promised to attend to the matter; others had promised to do so, if necessary; while several had not sent any reply, although the surveyor had written to them twice. The clerk said there was no doubt about these landings being private property. Under the Police Act it was an offence punishable with a fine of 40*s.* to have a landing in a dangerous state. Mr. Walker thought the most dangerous case should be selected, and the owner summoned before the magistrate to try the question. The surveyor, in answer to a question, said he knew one case that certainly was dangerous. Mr. Walker then moved that the worst case be selected to try the question. Mr. J. Morris seconded. The clerk remarked that if the surveyor called the attention of the police to the landings, they could take out a summons if necessary, and the surveyor could attend as a witness. The motion of Mr. Walker was carried.

NOTES FROM AMERICA.

SIR,—The churches in the United States of America do not come up to the mark of European architecture. The fault is in a great measure due to the want of educated architects. Outside of the large cities, the "surveyor" is generally a small contractor, who probably has served his time as a frame carpenter, and whose ideas of architecture are not modelled after the fashion of the "*Orders*," even if he knows what the term means. But one thing the Americans are ahead of the Britishers in is, in the manner of providing comfort for the congregation. In New York the preachers are nearly all of the Sensational school, and pour out a sermon on politics as well as the teaching of Christianity: one reverend gentleman informing his hearers that many thought and looked upon a 25-cent shin-plaster as if it was the size of a horse-blanket; but for comfort give me an American church. The seats are all cushioned; a little rack attached to each pew, with a couple of Prayer-Books for the use of the worshippers; and in most little towns the seats are free, so that the poor can worship with equal comfort as the biggest "Bug" of the place.

In regard to trade-unions, America seems not to be agitated so much as England. The employers, so far as they consistently can, endeavour to give their hands piece-work, thus obviating a good deal the reason for strikes. One society, "The Mechanical Order of the Sons of Labour," from what I could learn from an important official, was based upon the system of the mechanic being recognised with equal rights, and on the same footing as the employer of labour and the capitalist. How far a surveyor or architect may be recognised would be a question of doubt; for, in reply to a question as to the social position of the surveyor, your correspondent was told, probably in jest, that it was a gentlemanly pastime. But I fear the "mechanic" had not roughed it in the bush and prairie, with the canopy of heaven for a curtain, and had not settled and staked off levels amidst a few Red Skins.

Perhaps one thing might be amusing to your readers who contemplate moving, to follow the fashion of the New Country. An old acquaintance of mine asked if I would assist in moving his house, consisting of six rooms: so all hands available went to work, and with the aid of screw-jacks put the house on rollers, then skidded it on a *traneau* (a sort of wooden sleigh), hitched on eight horses, and so moved the house and furniture a short distance of two miles. Recollect, we have no Temple Bars to stop the way.

The wages of mechanics vary in different States. If an artizan works in the country districts, he is boarded. In towns, the wages are:—For carpenters, 2 dols. to 3 dols.; masons and bricklayers, 3 dols. to 4 dols.; labourers, 1 dol. 25 c. to 1 dol. 50 c.; plasterers, 3 dols. to to 3 dols. 50 c.; painters, 1 dol. 50 c. to 2 dols. 50 c.; machinists, 3 dols. to 4 dols. Now, many of these trades cannot expect more than seven or eight months' regular work in the Northern and Eastern States. Food is reasonable, but clothing is fearful in price. A pilot jacket brought out with the writer, cost, in England, 1*l.* 18*s.*; for the like quality in the States he has paid 21 dols.,—more than double the price in England. QUERCUS.

INSTITUTION OF SURVEYORS.

AT a meeting on the 4th inst., a paper "On the Cost of Conversion of Forest and Wood Land into Cultivated Land," by Mr. John Clutton, past president, was read. It gave an account of the disafforestation of three of the Royal forests, viz.,—Hainault, in the county of Essex; Whichwood, in the county of Oxford; and Whittlewood, in the county of Northampton; and of the works which were carried out in making the land available for agriculture; and also stated the nature of the works which were executed with a similar view, on a portion of the lands formerly part of the Royal Forest of Delamere, in the county of Chester.

The first three mentioned forests comprised an area of about 10,850 acres, in which the Crown had the forestal rights, the soil and timber; other parties had common pasture, and other rights. The land being thus held, the value of the respective interests was small compared with what it has become since the disafforestation; for each owner then became possessed, in severalty, of a property which, being free from the rights of others, could be improved. The result, moreover, has been that, by the conversion from woodland, and the application of capital, a large amount of agricultural produce has been obtained, while a source of constant employment has been provided for the population of the districts.

The paper, which includes much valuable information, will hereafter be found *in extenso* in the Society's Transactions.

The most successful immediate return for the capital expended was from Whichwood. This arose from the fact that the clearing and buildings were the least expensive.

Hainault, from its proximity to London, will, no doubt, increase in value after the expiration of the present leases. The cost of the work of clearing was greatly enhanced by the conversion of about 90,000 pollards into a profitable form for sale.

The transactions in the case of Whittlewood were large, although only 300 acres were retained. The sale of the other portions of the allotment to resident proprietors enabled the Crown, by investing the money in the purchase of another estate, to obtain a total income of about 5,000*l.* per annum.

The works at Delamere have, no doubt, been the least successful of the operations, for the reasons before explained.

The following tabular statement shows the outlay made by the Crown in the conversion of the land acquired, and the rents obtained for it, in each of the cases dealt with:—

Forest.	Extent of Award.	Average Annual Profit derived by Crown in the Five Years previous to the Award.	Extent converted by Crown.	Outlay per Acre.	Rent per Acre.	Per-centage on Outlay.
	Acrs.	£	Acrs.	£. *s.* *d.*	£. *s.* *d.*	
Hainault	3013	485	2255	25 17 6	2 3 6	8¼
Whichwood ...	3778	1945	3016	9 18 6	1 12 3	16½
Whittlewood ..	4061	—	300	18 10 0	1 15 0	9½
Delamere	4000	—	1554	30 1 6	1 12 0	5¼

A short discussion ensued, and a vote of thanks to Mr. Clutton was passed. The discussion of the paper will be resumed at the next meeting, Monday, December 18th.

DOINGS IN DUBLIN.

AN Exhibition of Arts, Industries, and Manufactures for Ireland is under weigh, a proposal having been made by Sir Arthur Guinness and Mr. Edward Cecil Guinness to place the Exhibition Palace, now lying idle in Dublin, at the disposal of the public for an Industrial Exhibition during the ensuing year. A preliminary meeting has been held to consider the proposal. The meeting was an influential one, held under the presidency of the Duke of Leinster, several of the members of the nobility, professors, and leading merchants taking part.

The Earl of Howth moved that the liberal offer made by the Messrs. Guinness be accepted, which, it is needless to say, was done with the highest gratification.

Lord Sandhurst moved that the nobility and gentry who are collectors of art and art manufactures be requested to contribute to the loan museum.

The Marquis of Conyngham proposed a resolution that her Majesty be respectfully solicited to contribute also towards the loan museum from the collection of paintings and pottery at Windsor Castle.

Mr. James Owen, the President of the Institute of Irish Architects, submitted by letter the great desirability of making provision in the Exhibition for the study of architecture in conjunction with the other arts, as it was admitted that at present there were no means in Ireland for architectural study.

A committee was formed from the council to carry out the programme laid down for the proposed Exhibition next year.

It is reported that the Dowager Marchioness of Bath has sent a contribution of 100*l.* towards the restoration of Kildare Cathedral, which, like Christ Church Cathedral, has been committed to the hands of Mr. Street.

St. Augustine's Roman Catholic Church, in Thomas-street, the building of which has occupied several years, is apparently approaching to completion. The want of funds explains its slow progress. It is architecturally effective without;

but it is a question whether the selection of the different stones employed affords by the contrast of colour a favourable impression as to its service in this instance.

The presentment for the improvement of Essex Bridge has been passed, and the Corporation are making a request to the Port and Docks Board that the plan for widening, lowering, and improving the bridge may be of such a nature as to facilitate the widening of the approaches from Essex Quay to Wellington Quay, by removing the quay-walls further towards the present centre of the river.

The proposed improvement of Carlisle Bridge, to which the Corporation have been for years committed, is shelved for the present. It is difficult to conceive the object of the corporate authorities in thus postponing a work that all desire. Mr. Charles Geoghegan's design seems to be the right solution of the difficulty.

TURNERS AND TURNING.

Sir,—You have lately published a letter from Mr. Olley, of Bolsover-street, recommending the Turners' Company to employ an architect to furnish drawings, and each competitor to produce two or more specimens,—a very good test of ability; but I regret to say the turners, as a rule, are not in the habit of copying drawings accurately: the price the work is done at renders a perfect finish out of the question. You will, perhaps, hardly believe that a good workman, working in a shop where drawings are accurately copied, cannot earn more than 3s. per day, working on chair-work, so badly is that class of work paid for. In a cheap shop, where drawings are unknown, he would probably earn nearly double: so there is a great difficulty in getting men to do good work. I wish the turners would combine to produce good work, and stand out for fair wages. Let them cease to brag of the quantity they can produce, and stick to quality. I have been a turner twenty years, and never yet heard a man talk of the good work he has done; but have heard plenty of brag of the quantity,—cheap balusters, for instance, like bundles of wood-sticks, only fit to be burned.

It is a great pity so many apprentices are taken by men who never employ journeymen, and, in fact, do not know how to teach them. I have met with several young men after serving their time that have had no notion of working to drawings, or fitting templets. These are the men that ruin the trade. In the course of time they become masters from necessity, as no good shop will employ them, and the rubbish they produce is disgraceful. A Wood Turner.

ADULTERATED CEMENT.

At a meeting of the Chemical Society of Newcastle, not very long ago, the president of the society (Mr. John Glover) read the following statement, which calls for further publicity:—

"During the last few days I have learned that large quantities of blast furnace slag is being ground with Portland cement in this district, and as in the analysis of such cement great stress is very properly laid on its percentage of hydrated silicic acid, I have thought it well to draw your attention to the fact, as blast furnace slag, on being treated with hydro-chloric acid, yields a large percentage of hydrated or gelatinous silica, although it has not the slightest value as a cement. You will see from what I have said that a chemist, proceeding to the analysis of a cement so adulterated, might be misled if he were not aware of such adulteration. As a proof that such adulteration is a fraud on the purchaser, I have caused the following experiments on the cohesive power of a pure cement, and of the same cement mixed with slag, to be tried:—The average of a number of bricks of pure cement carried a weight of 485 lb., and broke with a weight of 492 lb.; while the same cement, mixed in the proportion of equal parts of cement and slag, bore a weight of only 301 lb., and broke with 308 lb. A mixture of the same cement, in the proportion of three of cement to one of slag, bore 375 lb., and broke with 382 lb., and each brick was made in the same mould, and was allowed seven days to harden. You will see from these tests that a purchaser of such cement will not be able to mix with it the same amount of sand as when he buys the pure article, as the slag already mixed with it has taken the place of so much sand, and is really of no greater value than sand, as bricks mixed with sand in the same proportions as when slag was used, gave nearly the same results. If slag gives a better appearance or colour to Portland cement, a fair trader should state the fact of its presence, so that his customer might know the price he is paying for such qualities. If our analytical chemists would undertake to test the physical properties of cement, such as cohesion, hardness, &c., as well as its chemical composition, they would supply a want, as there is no such public tester, at least in this neighbourhood."

CHURCH-BUILDING NEWS.

Hadleigh.—The church here has been restored and re-opened. The pews which blocked up the view have now been removed, and in their place are open benches. Former restorations did pretty nearly all that could be done to the external walls and the roof, and the work, which has now been going on for about seven months, has been confined to the interior of the church, the appearance of which, as may be gathered, has been completely altered, whilst additional accommodation has been secured, and more than 1,000 persons could now find sittings. New oak benches cover the whole area of both nave and aisles. They are made with sloping backs, and ample space is left between them. The ends are thick, moulded and carved, representing flowers, fruit, and foliage, but throughout the whole number no two are precisely alike. The iron brackets, painted with bright blue and gold, which served to support the tie-beams of the nave roof, have now been cased in oak supports, which spring from carved stone corbels. The roofs of the north and south aisles have also been repaired with timber braces, and stone corbels have been inserted where they were required. The stonework of the piers of the nave was in an unsatisfactory condition in many places, and these defects have been remedied, and the mouldings of the capitals and piers repaired. The two chapels at the east end of the chancel aisles, separated from the church by ancient carved oak screens, have been repaired and restored, the most noteworthy part of the work being the restoration of the cresting or brattishing. The paving of the church has been replaced with coloured tiles, laid in a variety of patterns. In the passages of the nave and aisles the colours are simply a deep warm red and black; but proceeding eastward the patterns become more elaborate, and glazed tiles of one or two other colours are introduced. The patterns in which the tiles are laid were designed by the architect, and the tiles were supplied by Mr. Godwin, of Hereford. The altar-rail is of oak. It is shafted, moulded, and carved. Sunken panels contain little bits of carving, representing the emblems or instruments of the Passion, executed by Mr. John Spurgeon, of Stowmarket, who also executed the carvings on the bench-ends. A new pulpit, prayer-desks, and lectern have been contributed by various friends. The pulpit is of carved oak, the panels being of dark pollard oak, on which is tracery carved, of oak of a lighter colour. It stands upon a base of clustered shafts, composed of verde-antique and other marbles, round a massive centre shaft. The coloured shafts are in contrast with their polished capitals of white Caen stone, from which springs groin-work, and the upper ribs of the groining are terminated by carved angels. The pulpit was executed by Messrs. Farmer & Brindley, of London. The prayer-desk fronts have open tracery, and the ends are carved, with sunk panels, the work being by Messrs. Rattee & Kett, Cambridge. The lectern is of brass, by Messrs. Hardman, of London. The whole of the works have been carried out from the designs and under the superintendence of Mr. J. Drayton Wyatt, of Holloway, who is the consulting architect to the Church-building Society of the Archdeaconry of Sudbury. Mr. J. A. Pettitt, of Hadleigh, was the contractor. The total cost of the work is about 1,500*l.*, including 127*l.* for the completion of the restoration of the roof. Mr. J. Darkin, Bury St. Edmund's, has acted as clerk of the works.

Hoole.—All Saints' Church, which was opened for divine worship four years ago, has now been consecrated. Mr. S. W. Dankes, of Westminster, was the architect. The edifice is of the Late Pointed style. It is built of the red sandstone of the district, the coigns only being of faced masonry, and the other parts left rough. The roof is covered with Westmoreland green slates, which contrast with the colour of the stone. A tower, containing six bells and surmounted by a lofty spire, terminates the south-west angle of the building. The interior of the church consists of nave, chancel, north aisle, with organ-chamber and vestry; the design allowing of the addition of a south aisle when found necessary. It contains sittings for 650 persons, all of which it is desired should be free if a sufficient endowment can be obtained for the support of the minister. The cost of the church has been about 6,000*l.*, exclusive of the tower and spire, which, with the bells, were the gift of a benevolent lady of the locality.

Gorton.—The new church at Gorton has been consecrated by the Bishop of Manchester. The church, which has been built by Mr. Charles Frederick Byer, from designs by Messrs. G. & J. Radcliffe Shaw, architects, St. Chad's, Saddleworth, is a stone edifice, in the style of architecture of the time of Edward III. It consists of chancel, nave, two side aisles, vestry, organ-chamber, tower, spire, and porch, with transept terminations of north and south aisles. The east and west windows are very large, and are filled with tracery, as are all the windows. The pillars and arches of stone are high, and support a lofty clearstory, upon which again rests the open-timbered roof with its arches. The church measures in the inside 114 ft., namely, the nave 88 ft. and the chancel 26 ft.: and in width the chancel is 24 ft., and the nave, including the aisles, 52 ft., and is calculated to hold from 800 to 900 people. The tower and spire are 150 ft. high, the latter being surmounted with a gilt cross. The pewing and benching are of pitch pine, and the pulpit, prayer-desk, and altar-table are of oak, carved, with perforated and canopy work. The chancel is paved with encaustic tiles, and the rest of the church with red, buff, and dark tiles in octagons and squares. The cost of the building is 6,000*l.*

Stalybridge. — It is proposed to enlarge St. Paul's Church, Stayley, Stalybridge, by the addition of 500 sittings, at a cost of 3,000*l.*: 1,000*l.* have been subscribed by four gentlemen connected with the parish. The committee appointed by the parishioners to carry out the enlargement have approved and adopted plans submitted to them at their request by Mr. W. H. Brakspear, architect. Mr. Brakspear was a pupil of the late Sir Charles Barry, and is, perhaps, best known as having carried out the restoration of Bowdon parish church.

SCHOOL-BUILDING NEWS.

London. — A new school is to be built in Hackney, and another in Lambeth, each to hold 1,000 children.

Mile-end.—A new school-building, erected in connexion with the Congregational Church in Church-street, Mile-end New Town, in lieu of the schools in Gascoigne-place, Shoreditch, has been opened. The school was removed for the purpose of providing space for approaches to Columbia Market. The new schools have been mainly built from the funds received from the Baroness Burdett Coutts for the building in Gascoigne-place, and are provided to accommodate about 500 children. The building is situated on the north side of Church-street, and consists of a school-room for boys, 58 ft. by 29 ft. and a height of 15 ft., with a class-room 21 ft. by 15 ft., of equal height, the main school-room having an additional area of 26 ft. by 8 ft. in the front portion. This school is approached by a distinct entrance, and the boys have a separate play-yard in the rear. The school-room for girls is on the first-floor, and contains 58 ft. by 29 ft., by 12 ft. to the wall-plate, and 25 ft. to the underside of the ridge of the roof; there are two class-rooms attached, one 21 ft. by 15 ft., by 14 ft. high, and one 26 ft. by 14 ft., by 12 ft. in height. This room is approached by a passage and stone staircase on the different side of the building to that of the boys' entrance. There is also a playground in the rear. Accommodation is provided for washing, and for the service of the establishment, on the second floor, where the keeper of the building will reside. The design of the building was furnished by Mr. Thomas Chatfeild Clarke, of Bishopsgate Within, and the works were executed by Messrs. Hill, Keddell, & Waldram, of Shoreditch.

Chatham.—The new schools and halls of study for the School of Military Engineering at Chatham are to be erected by Mr. G. Sollitt, of Strood. There were twelve tenders sent in to the War Department by builders sele ted, and

Mr. Sollitt's was the lowest. The amount is 23,000*l*. The buildings are to be erected near the Brompton Barracks, occupied by the corps of Royal Engineers, on the site of the Huts Barracks, the huts having been removed to St. Mary's.

Kingscote.—The new schools for the parishes of Kingscote, Bagpath, and Lasborough have been formally opened. Mr. Norris, of Uley, was the contractor.

Winslow.—A little school-room has just been completed at Hoggeston, near Winslow, Bucks, in the centre of the village, to meet the requirements of the parish, under the new Education Act. It is built of red Aylesbury bricks, relieved by grey bricks, and Bath stone has been sparingly used. Internally the walls are faced with grey bricks, tuck-pointed, and plaster has been entirely avoided. The roof is covered with plain tiles, and ceiled with stained and varnished boarding at the collar-beams. There is also a lining of similar boarding, 4 ft. high, around the walls of the room. There are separate entrances, offices, and playgrounds for the two sexes. Mr. W. Matthews, of Winslow, was the builder employed, and the Messrs. Spencer, of Aylesbury, were the architects. The site was given by Earl Stanhope, and the cost of the building was defrayed chiefly by his lordship, who is the patron of the living, and the rector, the Rev. J. G. Villar.

Lewes.—The new school-house for the parish of St. Anu's has been opened. The school has been built upon a suitable and healthy site on the Paddock-road, leading from Ireland's-lane to the Spital Farm-buildings. The architect was Mr. C. J. Berry, of Lewes; and the builder, Mr. J. Pearless, of Eastbourne. The style is Gothic, and the building has three gables, two entrance porches, and a bell turret. The material principally made use of is large whity flints, relieved by quoins and dressings of red brick. The principal apartment in the school-room is 58 ft. long, 22 ft. wide, and lofty, with open roof, showing the rafters and stained timber; at each end are one small circular and two pointed windows. On the north side is a class-room, 16 ft. by 20 ft., with raised tiers of seats. The entrance - porches for girls and boys are fitted up with pegs for caps, bonnets, &c. The seats and desks in the school-room are so constructed, that by a simple movement they may be converted into benches with backs. The outer walls are hollow, to prevent damp, and attention has been paid to ventilation, and that the whole place is warmed with hot-water apparatus. The front is enclosed by dwarf wall and iron railings. The work has cost 800*l*.

Maidstone.—The new boys' school, recently erected in St. Peter's parish, adjoining the other schools at Fant, has been opened. The school is 70 ft. long and 20 ft. wide, with a class-room 20 ft. by 14 ft. The walls, internally, are lined with white bricks, with arches of red bricks over the windows; the roof of the school-room is lofty and open, with stained and varnished timbers. Objection is raised against open roofs, on account of their acoustic effects, but in this case the objection does not hold good. The work of erection has been carried out by Messrs. Clements & Wallis, of Maidstone, under the superintendence of the architect, Mr. Hubert Bensted.

Newcastle-upon-Tyne.—The formal opening of the Bath-lane Schools took place on Friday, the 24th ult., when Mr. Edward Miall, M.P., delivered an address on Education. They are in the Early English style of architecture, of simple character, and built of local stone, with ashlar dressings. Accommodation is provided for 600 children, at a total cost of about 3,000*l*. Mr. Thomas Oliver was the architect, Mr. Henry Andrews the clerk of works, and Messrs. N. & R. Reed and Messrs. J. & W. Lowrey were the contractors.

Ardwick (Manchester).—St. Matthew's Middle Schools, Ardwick, have been opened. The schools are more especially adapted for children whose social position is above that of those who usually attend the national schools. Being the first middle-class schools erected in this district, more than common interest attached to the undertaking. The schools have been erected mainly through the liberality of Mr. Hugh Birley, M.P., and some others, and no pains or expense have been spared to make them as complete and perfect as possible. The architects are Messrs. Medland & Henry Taylor, of Manchester. The building is of two stories; the lower one contains the boys' school-room, 41 ft. by 30 ft.; two large class-rooms, master's book-room, latrines, &c.; the upper story contains the girls' school-room, the same size as the boys', three class-rooms, cloak-room, latrines, &c. One large upper class-room is devoted to a separate department for the younger boys. A stone staircase leads to this upper story. There are separate playgrounds for the boys and girls,—the former having a gymnasium. All the offices are contained within the main building, and are approached from lobbies on the staircase. Thus any exposure to wet or snow, after the children have once entered the school, is rendered unnecessary, and the trampling in of dirt or snow avoided. While the departments for boys and girls are quite distinct—the entrances, even, being from different streets—there is for the managers, and on special occasions internal communication. The upper room opens to the roof, and from it are suspended four gaslight coronæ. The material of which the schools are built is bright red brick, with Yorkshire stone dressings. The walls internally are lined, to a height of 1½ yard from the floor, with white glazed tiles, finished on the top with an ornamental band of encaustic tiling, containing Shaksperian mottoes. There is a skirting of black tile next the floor, running all round. The brickwork above is coloured buff, with pink round the windows. Over the fireplaces in the two school-rooms are panels of a large size, which are to be occupied by paintings in oil, representing "Caxton in Westminster Abbey," and "Palissy, the potter." The internal doors are panelled with framing. The glass generally is thick partially-obscured plate; but the tracery and some other parts of the windows contain a little coloured glass, arranged in patterns,—in some cases, a sort of flower on a diapered ground. The outline of the building, as it stands on the ground is very simple, hardly breaking out at all beyond the lines of a simple parallelogram. There is enough variety to prevent stiffness. The elevation facing Devonshire-street has three centre gables, with pointed windows, flanked on each side by a smaller one. The principal entrance is by an arched gateway from Devonshire-street, and the main door faces Hyde-road. It is a simple stone moulded doorway, with a gabled projecting canopy, supported on corbels. In the gable above the door is a sex-foiled circle, filled with ornamental glazing. There are massive chimney stacks of moulded brick, relieved with stone strings and other dressings. In the centre of the main roof is the belfry and spirelet, covered with green slates. There are also a few green slates in the roofing. The ridge cresting is of red tile. The boundary walls are surmounted by a light iron cresting, and the gates, which are of wrought-iron (that to Devonshire-street being the most ornate), are not easy to climb. There is accommodation for 430 children. The contractors were Messrs. J. Robinson & Son, of Hyde.

Miles Platting (Manchester). — St. Luke's Schools, Miles Platting, have been opened. The upper room, which is about 18 yards long by 10 yards wide, and lofty in proportion, has temporary fittings suitable for the Church of England ritual. The building is approached from the Oldham-road, through Albion-street. The outline of the new building is a parallelogram, simply treated, with recessed windows, and doors with splayed jambs, from which spring moulded and recessed arches. The heads of the doorways are occupied by a kind of diapered brickwork. A good deal of variety is obtained by the mezzanine stories at the ends of the building, the windows of which, differing in size, height, shape, and treatment from the regular schoolroom windows, indicate the arrangement within and aid the external effect. The straight line of the two long fronts is interrupted by four large gables over the arched heads of the schoolroom windows. Above, there are three large dormer ventilators in the roof. The fireplaces are so grouped as to gather into two chimney-stacks. From the centre of the main roof rise the belfry and clock-turret, the lower part of which is square in outline and slated. The stage above contains the four clock-faces. Above this is the bell-chamber, with twelve arched openings. At the corners are three wooden pinnacles. Each of the cardinal faces is gabled. The whole is covered with an octagonal spirelet, roofed with green slates, and surmounted by a simple metal cross. There are brick cornices in the eaves, gables, and elsewhere; and round the building, at the level of the upper floor, is a brick string, with encaustic tiles at intervals. The iron holdfasts to the water-pipes, the door-hinges, the air-gratings, &c., simple as they are, have all been specially designed and adapted to the building. The schools will accommodate 516 children,—boys, girls, and infants. On the ground floor are the infant schoolroom, 53 ft. by 30 ft.; class-room, 24 ft. by 15 ft. 6 in.; and separate offices within the building, at both ends. The boys and girls have separate stone staircases leading to the schoolrooms above. These rooms are each 26 ft. 6 in. by 30 ft., or convertible into one large room. In the basement there is a kitchen, with full appliances for tea-parties, &c. The schools are fitted with Richardson's convertible fittings, which can in a few minutes be changed from desks and benches, suitable for day-school purposes, into tables for tea parties, or into forms with backs for the Sunday-school or public meetings. There are playgrounds unusually large for a town neighbourhood, though not at all too large for their purpose. This is through the liberality of the dean and chapter, who gave the site. The building is of red bricks, with dressings of stock bricks, in arches, bands, the tympanæ of the doors, &c, and a little stone, but not any white, black, or blue brick. There are spacious stone staircases, lobbies, and entrances. The external walls are 2 ft. 3 in. in thickness, with a cavity for warmth and dryness. The glass is thick and strong, to provide against stone-throwing. The internal walls are painted to a height of a yard and a half, and coloured above. The contracts for foundations and for the completed building amounted in all to about 2,400*l*., and the building has been finished for a sum within the contract. Messrs. Medland & Henry Taylor were the architects, and the contractors Messrs. Rutherford & Darnbrough.

FROM SCOTLAND.

Forres.—The new United Presbyterian Church of Forres is now finished and opened for public worship. The ground-plan covers an area of 80 ft. by 62 ft. in extent, and is an oblong square, with nave, transepts, and side aisles. The north gable, the façade of the building, fronts the High-street. There are two square porches of entry at each side, approached by several steps, and finished with ornamented parapets and centre turrets. On either hand is a pinnacle, rising the entire height of the roof, and on the apex of the gable, which is enriched with open-work, there is an Ionic cross. The window in this north gable is proportioned after the model of one of the chapter-house windows of Elgin Cathedral. It measures 25 ft. by 12 ft., and is divided into five lights and flowing tracery at the top, which is filled in with stained glass. The lower lights are filled with cathedral glass, with floriated coloured borders. The clearstory windows are gableted over the roof, and set off with ornamented finials. In the south gable, immediately over the platform, is a rose-window, 13 ft. in diameter, divided into compartments, in flamboyant tracery. This window is filled in, by Messrs. Heaton, Butler, & Bayne, of London, with stained glass, in the style of the fourteenth century, five of the centre openings containing figures of angels in the attitude of adoration. The large west transept window, composed architecturally of four upright compartments, terminating in an arch, with flowing tracery, is filled by Messrs. Ballantine & Son, Edinburgh, with stained glass. These compartments are occupied with figures of the four Evangelists, and the other portions are filled with ornamentation. Along the aisles are a series of small lancet lights, which have been filled with memorial stained glass by various persons connected with the congregation. The prevailing groundwork is of a light silvery grey, diapered with various designs. Each light is surrounded with a narrow foliated border, executed in colours, and has a centrepiece of a scroll with a Scriptural text. The ornamental plaster-work, capitals, and embossing of the intersections of the aisle-roofs were by Mr. Adam Ross, after Goodwillie's designs. The heating and gasfitting were by Mr. Taylor. Mr. Rhind, of Inverness, was the architect.

Salted Wood. — In the *Polytechnisches Journal von Dingler* for October, Dr. Dingler states that wood, impregnated with a strong solution of common salt, resists decay, and answers well for underground work in mines and coal-pits.

PROVINCIAL NEWS.

New Swindon.—The 11th Wilts drill-hall and gymnasium has been opened. The new building, which is of dark blue stone, with freestone quoins and dressings, is situate in the north-west corner of the cricket-field or park. Being set back about 20 ft. the building admits of a series of three entrance-gates and iron palisades being placed in front, inclosing a pitched entrance with flower-gardens on either side. In front, the building consists of a large entrance-hall, which is approached through a pair of large folding doors, the drill-hall opening immediately from the entrance-hall. On either side of the entrance-hall there are orderly-rooms, on the right-hand side for the officers, and on the left for the sergeants. Forming wings to the centre building, there are two dwelling-houses for the officers in charge of the building. The drill-hall itself, which corresponds in width with the front buildings, is 80 ft. wide, by 100 ft. long. Externally the walls are of the same material as the front, the inside wall-lining being of brick limewashed. The whole of the space—8,000 square feet—is covered by two roofs, the top portions of which are of glass, and by means of which light is obtained. The gutter between these roofs is supported by two iron bressumers, the ends of which rest on the top of an iron column fixed in the centre of the room. The existence of this column is an objection to the room; but it was considered advisable to have some such support to a roof 80 ft. by 100 ft. The floor, which is raised several feet from the level of the surrounding ground, is of wood. The roofs are left open with the various iron girders showing. The Great Western Railway Company provided a share of the cost, and receive a yearly rent of 20*l.* for the building; but whether that converts it into the company's property may be a question.

Bradford.—The foundation-stone of a new workhouse for the Wharfedale Union has been laid at Newall, near Otley. The site is about a mile from Otley, and cost 600*l.* The extent of the site and union grounds will be about six acres. The new workhouse, offices, and out-buildings, are to cost about 10,000*l.* The architects are Messrs. C. S. & A. J. Nelson, Leeds, their plans having been selected from twenty competitors. The style of architecture is plain. The general plan consists of an entrance block—comprising offices, board-room, vagrant and probationers' wards—lying parallel with the road. Behind this there is the workhouse, and still further in the rear, and entirely separated from the rest of the building, is the infirmary. To the east will be situated the stabling accommodation. In the new workhouse accommodation will be provided for about 100 paupers, and in the infirmary there will be room for about 40 patients. This calculation is exclusive of accommodation for vagrants. The buildings will be of local stone, lined with brick. Provision has been made for the future addition of wards in which to treat infectious diseases.

Dorking.—The foundation-stone of the new public hall for Dorking has been laid by Mr. Cubitt, M.P. The architect is Mr. C. H. Driver, and the contractor Mr. W. Shearburn. The trowel with which the lime was *not* laid is to be forwarded to Mr. Cubitt, as it was not forthcoming at the ceremonial.

Rusholme.—St. Mary's Home for Female Penitents, Rusholme, the foundation-stone of which was laid last May, has been formally opened by the Bishop of Manchester. The building is situated in its own grounds in Dickinson-road, Rusholme. It consists of two floors, the lower containing the day-rooms, and the upper the bedrooms. The dormitories for the inmates are two in number, one containing eighteen beds and the other ten: the larger one is provided with two large stoves, and the smaller one with one stove. At the east end of the building is a small chapel, with a chaplain's room adjoining. Several of the windows of the chapel have been filled in with stained glass, while the aisles and altar space have been laid with encaustic tiles. The glass has been done by Messrs. Lavers, Barraud, & Westlake, of London and Manchester, and represent the Crucifixion (in the triplet east window), and SS. James and Andrew, the Good Shepherd, and the "Noli me tangere." The staircase window, which forms the central feature in the front elevation, is also filled in with stained glass, arranged in geometrical patterns, and the gable over it is terminated with a wrought-iron terminal. Adjoining the laundry is a drying-stove, while the washhouse will be fitted up with all the latest improvements. The buildings are of brick, the front being finished with "white headers," with stone dressings to the main entrance and staircase gable. The roofs are covered with slates of two tints, and are finished with red ridge tiles. The total cost of the buildings and boundary walls is about 3,000*l.*, exclusive of gifts. Mr. George Napier was the general contractor for the work, the sub-contractors being Hodkinson (brickwork), Fleetwood (masonry), Heyworth (plumbing), Thomason & Co. (gasfitting), Nickson (plastering), Barrow (slating), Leigh (heating); and the whole has been carried out under the superintendence of Mr. John Lowe, architect, Manchester.

Gainsborough.—The new Temperance Hall has now so far approached completion that it is about to be formally opened. The large room is capable of seating between 700 and 800 persons, and is suited for the holding of public meetings, entertainments, &c. The edifice is of brick, but has facings of freestone and coloured tiles, and its situation is central.

Books Received.

The Royal Institution: its Founder and its first Professors. By Dr. Bence Jones, Honorary Secretary. London: Longmans, Green, & Co. 1871.

This volume recalls some interesting passages in the early history of the Royal Institution, which was founded by Count Rumford, and made celebrated by Sir Humphrey Davy, whose grand discoveries were made in the Royal Institution, as most of our readers know. This history of the earlier years of the Institution includes a life of the founder, because his career and character determined its original form. Then follow brief accounts of the earliest professors, because the spirit that has shown itself in them has up to this time been the life of the Institution. Dr. Garnett and Dr. Thomas Young had comparatively little influence there, because the founder took the most active part in the establishment of his Institution; but when Count Rumford and Sir Joseph Banks had left, and Mr. Bernard and Sir John Hippesley were the leading managers Professor Davy gradually became the main supporter of the place, and to him chiefly it owes the form which it now retains.

During the last half-century the name of Faraday has been so blended with that of the Royal Institution that few people know what Davy made it; and fewer still have heard what Rumford at first intended it to be.

The secretary's account shows that the Institution owes its origin entirely to Rumford, and would certainly have failed but for Davy. Moreover, it shows that before Faraday came there, it had been the home of Dr. Garnett and of Dr. Thomas Young; Dr. Dalton had lodged and lectured for weeks there; Sydney Smith, Coleridge, Sir James Smith, Dibden, Dr. Crotch, Campbell, Landseer, Opie, and Flaxman had also lectured there; Sir Joseph Banks and Mr. Cavendish had been managers, and Dr. Wollaston and Dr. Jenner had been members.

For the life of Sir Humphry Davy Dr. Jones has met with some new facts in his laboratory note-books. These books give most of his daily work at the time when he was making his great discoveries regarding chemical electricity, the alkalies, and chlorine. He has also had the use of the notes by Faraday of four of the last lectures given by Davy at the Institution. This is the manuscript volume sent to Davy by Faraday when he asked to be employed at the Institution. It consists of 386 small quarto pages. Davy at this time was thirty-three, and Faraday was twenty-one. The one was full of energy to profit by the excellence he could follow, or to shun the evil he could foresee; the other had long reached the climax of his success by his youthful popularity as a lecturer and his early renown as a discoverer; and was about to make a rich and an unsuitable marriage; and before long was to suffer from the restlessness of the failing health that ended in fatal disease.

"Whenever a true comparison between these two nobles of the Institution can be made," says the author, "it will probably be seen that the genius of Davy has been hid by the perfection of Faraday.

Incomparably superior as Faraday was in unselfishness, exactness, and perseverance, and in many other respects also, yet certainly in originality and in eloquence he was inferior to Davy, and in love of research he was by no means his superior."

Davy, from his earliest energy to his latest feebleness, loved research; and, notwithstanding his marriage, his temper, and his early death, he first gained for the Royal Institution that great reputation for original discovery which has been and is the foundation of its success.

The work under notice, it must be remembered, is not a history of the Royal Institution down to the present time; but so far as it goes it is full of interest.

Picturesque Architectural Studies. By William Young, Architect. Parts 2 and 3. London: Spon.

Mr. Young has issued two more parts of a work we have already alluded to. For some reason not obvious paper of two sizes is used, which will render binding awkward. The title "Picturesque Architectural Studies," scarcely describes the work, which consists, so far as it goes, of designs for lodges, cottages, and so forth, by the author, some of which have been carried out. Mr. Young in the present parts includes plans and elevations for cottage hospitals. A design for a vicarage-house is not without merit. Mr. Young has a free fancy and a freer pencil. The sketchy style of drawing adopted leads to want of precision.

Experimental Mechanics. A Course of Lectures delivered at the Royal College of Science for Ireland. By Robt. Stawell Ball, A.M. London: Macmillan & Co. 1871.

It is easier to learn through the eye than the ear; and Mr. Ball, having to deliver a course of evening lectures upon "Experimental Mechanics" to artizans and others unable to attend the ordinary classes at the College, made copious use of experimental illustrations, using for the purpose Professor Willis's admirable system. The well-printed and fully-illustrated book now before us contains these lectures, the illustrations having been drawn from the apparatus. The book is well calculated to open the mind to a knowledge of the mechanical powers: knowledge is conveyed with simplicity and clearness.

Flint. A Paper read before the Geologists' Association. By M. H. Johnson, F.G.S. Printed for private circulation. Bacon, Printer, Lewes.

This paper was read in June last. It treats of the deposit of flint or silex in chalk, and suggests a theory to explain how sponges, &c., produce the flint modules in chalk mud. The author proposes to utilise such a process in the arts and manufactures, by coating perishable surfaces with silex while embedded in calcareous or argillaceous mud, with the help of soluble silicates and decomposing organic matters. An engraving is given of a specimen of orbicular silica, the flints having been deposited in concentric circles, the markings of which curiously resemble the concentric circles on the rocks of Northumberland and Argyleshire, as well as the "spectacle ornament," as it has been called, upon the standing stones in Scotland. Still, we are far from suggesting anything like identity. The concentric circled markings on rocks, on the stones at New Grange, on the Scottish and other stones, are associated with other markings more obviously carved, but the coincidence is curious.

VARIORUM.

The *Publishers' Circular* for December (S. Low) gives particulars of the Christmas books, and makes a bulky pamphlet. The wood engravings, printed as specimens from the various works, show anything but an advance on the part of book illustrators.——The *British Almanac and Companion for* 1872 stands at the head of its like. Amongst the essays in the *Companion*, those on the "Fine Arts at the International Exhibition," by Mr. Arthur Locker, and the "Industrial Results of Photography," by John Plummer, will be read with pleasure. Mr. James Thorne contributes a more than usually interesting *resumé* of Architectural and Building progress.——*De La Rue's Indelible Diaries and Memorandum Books* have appeared in their usual varieties and luxury of binding. Their *Desk Diary* is a neat book, suitable for library or counting-house. We may add here that Messrs. Thos. De La Rue & Co. have adopted the nine-hours movement, and that this reduction of the working hours originated with the firm themselves.——*Blackwood's Diary*, No. 5, gives a little more room than De La Rue's for each day's entries.——"Everybody's Year Book" (Wyman & Sons) includes much amusement as well as information, and gives illustrations of the Royal Albert Hall.——"School Boards and Board Schools: Practical

Suggestions. By A. Sonnenschein. Williams & Norgate, Covent-garden." The author of this pamphlet appears to be a teacher, and his remarks are practical, and relate to methods of school-keeping, as connected with the structure of school-rooms and furniture discipline, school-books, aims and methods of teaching, and training and appointment of teachers and inspectors, or examiners.——"The Twenty-seventh Annual Report of the Ragged School Union of London. Society's Offices, 1, Exeter Hall." The direction of charitable subscriptions to foreign needs during the last year has materially retarded the progress of our Ragged Schools; but still they are reported to have held their own; and there is hope that the forthcoming year will be more favourable to their progress.——"The Religion of Health: a Lecture by Dr. Elizabeth Blackwell. Second edition. Partridge & Co., Paternoster-row." This is an able and philosophical as well as practical little threepenny tractate on the divine laws of human development and health, as something more than a merely figurative branch of religious salvation. Dr. Blackwell announces an endeavour that is being made to form a Health Society, and gives her address in reference to it as 6, Barwood-place, Hyde Park.——"Economical One-rail Railway for India, the Colonies and Sparsely-populated Countries. By J. L. Haddan. Stanford, Charing-cross." The author of this project is director of public works at Aleppo, in Syria, and late of the G. I. P. Railway. The scheme is similar to Mr. Samuel's pannier railway. Mr. Haddan proposes the construction of a stone wall or a wooden erection (why not also use iron?) along the route, with light locomotives and carriages to run upon a single file of vertical wheels along the top of the structure, the vehicles being at either side, with horizontal wheels, those of the locomotive being made to grip the wall with regulated force. Mr. Haddan states that such lines of light railway could be executed in many cases at from 500*l.* to 1,000*l.* a mile, and lighter ones still at 300*l.* a mile. One of this latter kind is being constructed in Aleppo. Each carriage conveys four passengers, and each wagon ¼ of a ton in weight.——A useful table, in colours, titled "An Illustration of the Proportionate Fattening and Flesh-forming Qualities of nearly all the Feeding Substances in general Use by Farmers; also the Manurial Value of the Residue from each Article," has been issued as "A Supplement to the *Agricultural Economist* for December, 1871." It is accompanied by a sheet of relative letter-press.

Miscellanea.

Restoration of Ragley Hall, Alcester. The mansion called Ragley Hall, near Alcester, which recently came into the possession of the present Marquis of Hertford, has been restored. It was found necessary to take off the roof, and entirely change its construction, adding a new story, with fourteen servants' bedrooms. The old lead and slates were found unfit to remain, and on the new roofs nearly 50 tons of new lead have been laid. A large part of the west front wall was found weak and untrustworthy, and it has been entirely taken down and re-built. In the basement new kitchens, scalleries, and larders have been made, and fitted up with modern appliances. An extensive system of heating by hot water has been carried out by Mr. Gale, of London; and hot and cold water has been laid on in every part of the mansion. The laundry and washhouses are newly fitted; part of the stables are fitted with Barton's ironwork walls, lined with encaustic buff tiles. A new carriageway has been made from the mansion to the stable-yard, and at every part of this large edifice great improvements are made. Gasworks have also been erected. The entrance-hall, which is about 80 ft. long, 45 ft. high, and 40 ft. wide, is full of carving, and ornaments on the walls and ceiling. On all parts of the estate the owner is giving special attention to cottage repairs and improvements. His lordship has given a dinner to the workmen employed under the contractors, Messrs. Clark & Smallwood, of Wooten Wawen. A good portion of the work is complete for the present. Mr. W. Tasker, of London, is the architect.

Marylebone Police Court.—A new police-court is to be erected in Marylebone. Her Majesty's Commissioners of Works have under consideration two sites,—one in Chapel-street, near the Edgware-road, and the other in Marylebone-road, adjoining Baker-street Station.

The Serpent Myths of Egypt.—At a meeting of the Victoria Institute last week, Mr. Cooper read a paper on "The Serpent Myths of Ancient Egypt," in which he said that while much has been done for the elucidation of the Ophiolatry of India, Greece, and Rome by many most able scholars, yet the serpent myths of Egypt—the oldest, most abundant, and best preserved of them all—had been but little attended to since the time of Champollion and Wilkinson. On the Continent, it is true that MM. Pierret, Brugsch, and Lenormant had published a few isolated papers upon parts of the legends of hieroglyphy, but these had never been translated into English, and even the originals were but little known. He then described the three serpents peculiar to Egypt, two of which were objects of worship, and with one or other of which all the ideographic theology of Egypt was involved. In the discussion which followed, Mr. Titcombe drew attention to the serpent symbolism existing amongst the rude tribes of North America, and a large Egyptian drawing from a tomb was explained. Mr. Rassam and Dr. Pritchard described the various serpents of India, and the Rev. G. Henslow those found in a fossil state.

Warwick Castle.—The work of clearing the desolated apartments is nearly completed. Workmen are engaged in removing the damaged woodwork from the corridor leading from the great hall to the gilt and other state rooms, and otherwise preparing generally for the repairs shortly to be commenced. The quantity of *débris* is enormous. Everything is carefully examined, and the exhumed articles assorted and placed in different heaps. They consist of masses of lead, iron, &c., melted by the intense heat; relics of costly furniture, valuable ornaments, broken curiosities, &c. The work of restoration, though expensive, will be far less costly than has been anticipated; and when completed, the castle will only appear to have been thoroughly renovated throughout the private apartments. The exterior will be wholly unchanged. It is understood that the old battle-axes, tomahawks, and ancient weapons of warfare formerly hanging in the corridor, near the great hall, were of great service in wrenching the pictures from the walls and getting them down. But for the fact that they were there, and came handy as crowbars and jemmys, a great deal of the property would not have been saved.

The City Churches.—The Church of St. Mildred's, Poultry, opposite the Mansion House, is closed. The valuable site of 4,000 ft. or 5,000 ft. is now for sale by the Ecclesiastical Commissioners. Part of the proceeds will be appropriated for a church in St. Paul's, Clerkenwell, with 8,000 souls, where the Rev. A. Styleman Herring acts as incumbent. About 1,000 ft. of the site are bought (for a nominal sum) by the Commissioners of Sewers, to enlarge the public road and footway. In addition to St. Mildred's, Poultry, arrangements will in all probability be made for the removal of some other City churches, St. Antholm, Watling-street, and that of St. Martin Outwich, which stands on a valuable site at the junction of Bishopsgate-street and Threadneedle-street. It is proposed to unite it with the vicarage of St. Helen's, Bishopsgate, the Rev. Dr. J. E. Cox, vicar of St. Helen's, being the vicar of the joint parishes. The Church of St. James, Duke's-place, Houndsditch, a locality inhabited almost exclusively by Jews, is to be removed and united with that of St. Catherine Cree, Leadenhall-street.

The Proposed New Royal Mint.—At a meeting of the vestry of the parish of St. Bride, City, the chairman (the Rev. C. Marshall) said the plans and notices of intended application to Parliament relating to the new Mint building site had been deposited with the vestry. The site of the proposed new Mint was at the bottom of Dorset-street, Salisbury-square, facing the Embankment. It was proposed to take the gasworks away. Mr. Patterson said that, in the process of gold-refining nitric acid and muriatic acid were used, and the fumes of these would, if the Mint were erected where proposed, be floating in the atmosphere all over the neighbourhood. It was well known that the neighbourhood of the present Mint was very unhealthy. After some discussion the chairman said he was glad the vestry agreed with him that the Bill should be opposed. The matter was then referred to the Estates Committee, with instructions to watch and oppose the Bill.

Partial Destruction of the Borough-road Schools.—A fire has taken place in the British and Foreign Normal College Schools, Borough-road. Nearly 100 young men were sleeping on the premises at the time. They all escaped, with much difficulty, as the flames spread with amazing rapidity. By the time the engines arrived the conflagration had got beyond all immediate control, and the normal schools were entirely destroyed, together with the young men's effects. The front block of the buildings was saved. Strenuous efforts were being made to enlarge the college and train a greater number of teachers for the new elementary schools. The schools and college were insured. The official report describes the damage done as follows:—A building of five floors, used as kitchen, class-rooms, and dormitories, 60 ft., and 15 ft. wide, nearly burnt out, and roof off. Dining-rooms seriously damaged by fire, and rest of front building and contents damaged.

New Vestry Hall, Springfield.—A meeting of the parishioners of Springfield has been held in the vestry at All Saints' Church, the rector, the Rev. Arthur Pearson, in the chair, "for the purpose of receiving plans and estimates for building a vestry and receiving-room." The plans were prepared by Mr. C. Pertwee, architect, Chelmsford. The proposed vestry-room is to be 32 ft. and 21 ft. by 14 ft. in height, and attached thereto is a small yard with out-building and conveniences. The building is to be of red brick and tiled. The tenders for the same were:—Mr. Thorn, 267*l.*; Mr. Barnard, 256*l.* 13*s.*; Mr. Bloomfield, 236*l.* 4*s.* 10*d.* It was agreed that Mr. Pertwee's plans be adopted, and that the tender of Mr. Bloomfield, of Springfield, for carrying out the work at 236*l.* 4*s.* 10*d.* be accepted, subject to the approval of the Poor Law Board. Arrangements had been made for the purchase of a piece of land in the village for 71*l.* 10*s.*

Appointment of Surveyor to the Liverpool Corporation.—At a recent meeting of the town council, Mr. Picton moved the following recommendation of the finance committee: "To appoint Mr. Thomas Shelmerdine as surveyor of the corporation during the pleasure of the council, at a salary of 700*l.* per annum." He said that every possible care had been taken in the selection of Mr. Shelmerdine. Although only twenty-nine years of age, he had had great local experience, and had a knowledge of the leasing of property in and about Liverpool. Mr. P. H. Rathbone, moved, as an amendment, that the title of the new officer should be "Land Steward and Surveyor to the Corporation." There was great misunderstanding throughout the country from the fact that the term surveyor was used as synonymous with engineer. Mr. Yates seconded the amendment, which was accepted by Mr. Picton, and agreed to.

The Crypt in Bruton Church.—During the progress of the work recently undertaken for the restoration of the parish church of Bruton, the workmen accidentally opened a large vault, which was recognized by the sexton as the family vault of the late Lords Berkeley. It appeared from autographs and dates scribbled on the walls to have been opened in 1847, although no interment has taken place in it since 1773. Some gentlemen versed in archæology pronounce it to be a crypt of beautiful proportions, and of ancient date. It is situated slightly to the north of the middle aisle, and lies partly beneath the chancel, and partly beneath the nave; it is about 30 ft. long by 18 ft. broad, and 8 ft. high. The roof, which is groined and filled in with tufa, is supported by ten octagonal columns—two on each side, and two in the centre. It seems to have formed part of an older church. A crypt beneath a parish church is of unusual occurrence.

Water-Colour Drawings.—With a view to the completion of the collection of water-colour paintings illustrating the history of that art in the South Kensington Museum, Mr. William Smith, Vice-President of the National Portrait Gallery Trustees, has allowed Mr. Redgrave to select from his collection a number of rare specimens to illustrate the early period of this national art, and has presented them to the nation.

Disposal of Land.—On Monday evening, the 18th inst., Mr. Jacob Waley will read a paper at a meeting of the Social Science Association, "On the Devolution, Transfer, and Disposition of Land."

Death of the Eccentric House-owner, of Stamford-street.—For some years past a row of uninhabited houses in Stamford-street, at that end facing the Blackfriars-road, has excited general notice. The houses in question were the property of a Miss Read, who has just died. The cause of the miserable condition of the houses was due, some allege, to an impression prevailing in the neighbourhood that they were "haunted." The deceased lady, who lived in one of the houses, apparently was careless as to its cleanliness, her dwelling being in a miserable state. The windows were covered with accumulated dirt, notwithstanding the valuable articles of virtu she had placed in it.

Vault in the Rock near Lincoln Cathedral. The workmen in rebuilding part of the choristry occupied by the cathedral organist, have come upon a large subterranean vault, situated under the children's nursery. It is believed to be an old stone quarry, though it presented to view a well-shaped chamber, 16 ft. long, 10 ft. wide, and 40 ft. in depth. It was covered in with artificial stone, except a good-sized man-hole, which had been fitted with a piece of natural rock. A layer of earth now conceals the quarry from further inspection.

Proposed Public Building for West Vale and Greetland (near Huddersfield). — A crowded public meeting of the inhabitants of West Vale and Greetland has been held, for the purpose of considering the desirability of erecting a public building in West Vale, capable of affording accommodation for a mechanics' institute and newsroom, and in which concerts could be given, and lectures delivered, &c. Mr. James Law was called to the chair, and it was unanimously resolved to proceed with the object in view. A committee was appointed. The probable cost was said to be about 1,500*l.*

The Breathing of Dust by Workmen.—The Société d'Encouragement of Paris having offered a prize for an invention to protect the cutters of mill-stones from the dust produced in the process, which produces distressing diseases of the lungs, M. Catelliers and a commission have been making a series of experiments on the effects of ventilation. By means of a fire and a tall chimney, a current is produced in the dressing-shop, having a rate of 10 ft. per second, from the men, and it is found that by this simple method all the dust is removed. But the remedy seems to be as bad as the disease, unless the men are to be protected from the draught. Such remedies are not new in this country.

Turning on the Air.—A Washington paper states that among recent improvements at the Capitol are some changes in the ventilation of the Senate Chamber suggested by the experience of last session. It is believed that the entire body of air in the hall can be renewed every five or six minutes without perceptible currents. This register is also arranged for summer use, so that by the turning of a brass cap in each compartment, which can be arranged by each senator to suit himself, a current of cool air can be directed under the desks and into the faces of their occupants.

Disaster to Leith Pier.—Between 800 and 900 yards of the west pier at Leith have been destroyed by fire. The pier, which was to a great extent of wood, was being covered with pitch, when the pot containing the liquid boiled over and set the pier in flames. Four or five fire-engines were got on board steamers, from which they were worked. The fire lasted all day. The communication with the docks was cut off, so that the shipping escaped. The loss is supposed to amount to about 15,000*l.*

American Diamond Drills.—The machinery employed by Leschot to propel his drill was very imperfect, and the method of fastening the diamonds has been improved by the Americans since the introduction of his invention into the United States. The principle of working the drill through a sleeve, held in position by a brake, has been adopted with advantage, and the American Diamond Drill Company are now taking a large number of orders. It will drill 12 in. per minute in sandstone, and ¾ in. per minute in hard blue limestone.

The Literary Fund.—His Majesty the King of the Belgians has graciously consented to preside at the anniversary dinner of the Royal Literary Fund, which will be held in May next.

Gallery of Illustration.—We are very glad to hear that Mr. and Mrs. German Reed have induced Mr. J. R. Planché to supply them with an entertainment for Christmas, under the title of "King Christmas, a Fancy-Full Morality." Mr. Planché's reputation for refined wit and pungent joke has, we hear, been well preserved, for the humour of the novelty is as genial as the season it extols; the dialogue sparkles with *jeux d'esprit*, at the same time that it is easy and flowing. Mr. Corney Grain, too, will bring out a new musical sketch on Boxing-day.

A Park in Southwark.—An effort is now being made to secure the open space in Southwark, familiarly known as Southwark Park, as a permanent recreation-ground for the public. The Bermondsey vestry are taking action in the matter, with the view of obtaining the sanction of the Metropolitan Board of Works to the proposal; and it is expected that the last-named body will comply with the request intended to be made to them to convert the locality into pleasure grounds.

Hampstead Heath.—Anxiety is expressed as to the steps that may be taken by the Metropolitan Board of Works, with a view to having the heath laid out in a worthy manner. We agree with those who think it a fit subject for a competition, but the Board, if they adopt this plan, must manage it better than they did their competition for a fountain, which ended very unsatisfactorily. They should form a proper jury of selection, including in it some professional artists.

Letter-Boxes.—A letter has been written by the Postmaster-General to the Metropolitan Board of Works, calling attention to the expediency, in the coming session of Parliament, of inserting in the Buildings Regulations Bill a clause for the purpose of compelling builders of houses to provide all their tenants with letter-boxes, for the purpose of facilitating the delivery of letters. It is not intended that such compulsion should extend to houses below a certain class.

The New Covered Market, Bradford.—The ornamental façade of the new market in Kirkgate has been uncovered. There is carved masonry over the main entrance. An archway opens into the market, and above that the building rises to a moderate height. Rising from the roof is a sort of belfry, with a compass and weathercock arranged on the top.

Reading Architectural Association.—An essay was read in connexion with this Association, last week, at the Athenæum, by Mr. Joseph Morris, "On our Parish Churches: their Local and General Interest." There was a good attendance.

New County Court Offices, Durham.—The first clerk of the works was Mr. C. E. Barker. The name given in our recent notice was that of his successor.

TENDERS

For Wesleyan day-schools, Red Hill. Mr. A. Lauder, architect:—

Godard	£1,452	0	0
Cook	1,403	0	0
Sherwood	1,360	0	0
Barns	1,129	0	0
Russell	1,108	0	0
Taylor	1,040	0	0
Brown	1,025	0	0

For wharf-keeper's house, Fish Quay and Jetty, Low Lights, North Shields, Contract No. 4. Mr. J. P. Spencer, architect:—

Sopwith & Kent	£745	10	0
Campbell	745	0	0
Bolton	730	0	0
Robson (accepted)	680	0	0
Elliott (withdrawn)	665	0	0

For constructing shops, &c., at 2, 3, and 4, Bedford-place, Hastings. Mr. A. Cross, architect:—

Jones	£757	0	0
Geary	722	0	0
Howell	719	0	0
Parks	710	0	0
Vidler	675	0	0
Russell	645	0	0

For erection of new parochial schools and teachers' residence, St. Andrew's, Hastings, for the Misses Sayer. Messrs. E. Habershon & Brock, architects:—

Rodda	£2,728	0	0
Nightingale	2,666	0	0
Wood	2,600	0	0
Brigeland	2,498	0	0
Avis & Roe	2,375	0	0
Catt	2,335	0	0
Howell	2,247	0	0
Vidler	2,243	0	0
Parkes	2,212	0	0
Hughes	2,140	0	0

For house for Mr. W. Brooks, Wishaw. Mr. W. Swift, architect. Quantities by Messrs. T. C. & J. P. Sharp:—

Briley	£1,190	0	0
Langley (Walmsley Ash)	1,158	0	0
Clarson & Son	1,120	0	0
Langley (Minworth)	1,067	0	0
Townsend (accepted)	1,025	0	0

For alterations at 117, Newgate-street, for dining-rooms. Mr. J. H. Rowley, architect:—

Rivett	£1,171	0	0
Nind	1,125	0	0
Crabb	950	0	0
Killby	947	0	0
Newman & Mann	863	0	0
Heeps (accepted)	827	0	0

For new meeting-house for the Society of Friends, Colchester. Mr. H. Baker, architect:—

Dobson	£1,874	0	0
Gardner	1,860	0	0
Lee	1,676	15	0
Brown (accepted)	1,570	0	0

For alterations to No. 80, Fenchurch-street, for Messrs. Cassell, Smith, & Co. Mr. E. H. Horne, architect:—

Sparks	£2,756	0	0
Temple & Forster	2,150	0	0
Brass	2,076	0	0
Hill, Keddel, & Waldram	2,050	0	0
Wicks, Bangs, & Co.	1,990	0	0
Eaton & Chapman	1,986	0	0
Scrivener & White	1,963	0	0
Williams & Son	1,847	0	0
Sewell & Son	1,844	0	0
Foster (accepted)	1,777	0	0

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We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

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